

DMH/LMT/pdd  
December 11, 2000

-1-

Date: <u>12/11/00</u> Express Mail Label No. <u>EL552288294 US</u>
--

Inventors: Mark Daly, Thomas Hudson, Eric S. Lander, John Rioux  
and Kathy Siminovitch

Attorney's Docket No.: 2825.1025-002

## IBD-RELATED POLYMORPHISMS

### RELATED APPLICATIONS

- This application claims the benefit of U.S. Provisional Application Serial No. 60/170,257, filed December 10, 1999, and U.S. Provisional Application Serial No. 60/196,046, filed April 10, 2000, the entire teachings of both of which are incorporated herein by reference in their entirety.

### BACKGROUND OF THE INVENTION

- The genomes of all organisms undergo spontaneous mutation in the course of their continuing evolution, generating variant forms of progenitor nucleic acid sequences (Gusella, *Ann. Rev. Biochem.* 55, 831-854 (1986)). The variant form may confer an evolutionary advantage or disadvantage relative to a progenitor form, or may be neutral. In some instances, a variant form confers a lethal disadvantage and is not transmitted to subsequent generations of the organism. In other instances, a variant form confers an evolutionary advantage to the species and is eventually incorporated into the DNA of many or most members of the species and effectively becomes the

progenitor form. In many instances, both progenitor and variant form(s) survive and co-exist in a species population. The coexistence of multiple forms of a sequence gives rise to polymorphisms.

Several different types of polymorphism have been reported. A restriction  
 5 fragment length polymorphism (RFLP) is a variation in DNA sequence that alters the length of a restriction fragment (Botstein *et al.*, *Am. J. Hum. Genet.* 32, 314-331 (1980)). The restriction fragment length polymorphism may create or delete a restriction site, thus changing the length of the restriction fragment. RFLPs have been widely used in human and animal genetic analyses (see WO 90/13668; W090/11369;  
 10 Donis-Keller, *Cell* 51, 319-337 (1987); Lander *et al.*, *Genetics* 121, 85-99 (1989)). When a heritable trait can be linked to a particular RFLP, the presence of the RFLP in an individual can be used to predict the likelihood that the animal will also exhibit the trait.

Other polymorphisms take the form of short tandem repeats (STRs) that include  
 15 tandem di-, tri- and tetra-nucleotide repeated motifs. These tandem repeats are also referred to as variable number tandem repeat (VNTR) polymorphisms. VNTRs have been used in identity and paternity analysis (US 5,075,217; Armour *et al.*, *FEBS Lett.* 307, 113-115 (1992); Horn *et al.*, W0 91/14003; Jeffreys, EP 370,719), and in a large number of genetic mapping studies.

20 Other polymorphisms take the form of single nucleotide variations between individuals of the same species. Such polymorphisms are far more frequent than RFLPs, STRs and VNTRs. Some single nucleotide polymorphisms (SNP) occur in protein-coding nucleic acid sequences (coding sequence SNP (cSNP)), in which case, one of the polymorphic forms may give rise to the expression of a defective or otherwise  
 25 variant protein and, potentially, a genetic disease. Examples of genes in which polymorphisms within coding sequences give rise to genetic disease include  $\beta$ -globin (sickle cell anemia), apoE4 (Alzheimer's Disease), Factor V Leiden (thrombosis), and CFTR (cystic fibrosis). cSNPs can alter the codon sequence of the gene and therefore specify an alternative amino acid. Such changes are called "missense" when another



amino acid is substituted, and "nonsense" when the alternative codon specifies a stop signal in protein translation. When the cSNP does not alter the amino acid specified the cSNP is called "silent". Other single nucleotide polymorphisms occur in noncoding regions. Some of these polymorphisms may also result in defective protein expression  
5 (e.g., as a result of defective splicing). Other single nucleotide polymorphisms have no phenotypic effects.

Single nucleotide polymorphisms can be used in the same manner as RFLPs and VNTRs, but offer several advantages. Single nucleotide polymorphisms occur with greater frequency and are spaced more uniformly throughout the genome than other  
10 forms of polymorphism. The greater frequency and uniformity of single nucleotide polymorphisms means that there is a greater probability that such a polymorphism will be found in close proximity to a genetic locus of interest than would be the case for other polymorphisms. The different forms of characterized single nucleotide polymorphisms are often easier to distinguish than other types of polymorphism (e.g.,  
15 by use of assays employing allele-specific hybridization probes or primers).

Only a small percentage of the total repository of polymorphisms in humans and other organisms has been identified. The limited number of polymorphisms identified to date is due to the large amount of work required for their detection by conventional methods. For example, a conventional approach to identifying polymorphisms might be  
20 to sequence the same stretch of DNA in a population of individuals by dideoxy sequencing. In this type of approach, the amount of work increases in proportion to both the length of sequence and the number of individuals in a population and becomes impractical for large stretches of DNA or large numbers of persons.

## SUMMARY OF THE INVENTION

25 Work described herein pertains to the identification of polymorphisms which are associated with inflammatory bowel diseases (IBD), and particularly those within a single risk haplotype, by resequencing large numbers of genes and gene fragments in a large number of individuals. Various genes from a number of individuals have been

resequenced as described herein, and SNPs in these genes have been discovered (see Table 3). Some of these SNPs are cSNPs which specify a different amino acid sequence, some of the SNPs are silent cSNPs and some of these cSNPs specify a stop signal in protein translation. Some of the identified SNPs were located in non-coding regions.

With the goal of identifying IBD susceptibility genes, a genomewide scan was undertaken in 163 pedigrees, and three regions of suggestive linkage (3, 5q31-33, 6p) and one of significant linkage to 19p13 (LOD = 4.6) were identified. Higher density mapping in the suggestive 5q31-33 region revealed a CD susceptibility locus of genome-wide significance (LOD = 3.9). Importantly, the 5q31-p33 localizes to the major immunoregulatory cytokine gene cluster and the 19p13 locus to a region containing numerous genes encoding cytokine/chemokine receptors and other inflammatory-associated molecules that could have a direct role in disease susceptibility.

In order to pursue the evidence of linkage to chromosome 5, a systematic linkage disequilibrium (LD) approach was adopted. The approach that was used in the first stage of LD mapping was to genotype all known microsatellite markers in the 18 cM between D5S1435 and D5S1480, as these two markers delimit a region of a 2 LOD drop on either side of the linkage peak centered at marker D5S2497. All alleles for each marker were examined for evidence of excess transmission from heterozygous parents to CD child using the transmission disequilibrium test (TDT). Only alleles at two of the 57 markers had significant  $C^2$  results ( $p < 0.001$ ): IRF1p1 ( $C^2 = 13.3$ ,  $p = 0.0003$ ) and D5S1984 ( $C^2 = 14.0$ ,  $p = 0.0002$ ) (Table 1). A second stage of mapping was then undertaken to confirm, as well as to better delimit, the region of LD surrounding IRF1p1 and D5S1984. The development of new microsatellite markers was necessary. The marker with the most significant  $C^2$  result was CAh17a ( $C^2 = 16.2$ ,  $p = 0.00006$ ) and was located between IRF1p1 and D5S1984 (Table 2). Furthermore, the alleles 193, 156, 373, 140, 222, and 307 at markers GAh18a, IRF1p, CAh15a, CAh17a, D5S1984,

CSF2p10, respectively, define a haplotype conferring susceptibility to Crohn's disease (CD). In order to identify the sequence variant that would explain the genetic susceptibility to CD provided by this haplotype, a search was performed for all single nucleotide polymorphisms (SNPs) in this region of LD. The SNP discovery was  
 5 accomplished by direct sequencing of overlapping PCR products amplified from DNA samples from eight individuals (six CD patients, one unaffected family member, and one CEPH DNA as control). Table 3 shows the results of the SNP discovery analyses.

139 triads were genotyped for a total of 241 SNPs thus far, where at least 50 trios were fully genotyped. Using a  $C^2$  value of 13 (corresponding to a p-value of 0.05) as  
 10 threshold, 12 SNPs were found to have a significant level of association with CD and extended over a region of 250 kb, from IRF1 to prolyl4 hydroxylase. These were markers IGR2055a\_1, IGR2060a\_1, IGR2063b\_1, IGR2069a\_2, IGR2078a\_1, IGR2096a\_1, IGR2198a\_1, IGR2230a\_1, IGR2277a\_1, IGR3081a\_1, IGR3096a\_1, PROLYLex3\_1 (see Table 4). Any of these best SNPs by themselves are in strong  
 15 association with CD and fully explain the microsatellite LD observations. Furthermore, the best SNPs have nearly identical association characteristics (that is, the allele at one SNP determines the allele of all others on any phased chromosome), confirming that a single risk haplotype extending approximately 250 kb is the source of all the observations of association in this region. Specifically, this haplotype is defined by the  
 20 alleles G, C, G, T, A, A, G, T, G, G, C, T at markers IGR2055a\_1, IGR2060a\_1, IGR2063b\_1, IGR2069a\_2, IGR2078a\_1, IGR2096a\_1, IGR2198a\_1, IGR2230a\_1, IGR2277a\_1, IGR3081a\_1, IGR3096a\_1, PROLYLex3\_1, respectively. The frequency of this haplotype is estimated to be approximately 37% in the general population. Furthermore, this haplotype is transmitted from heterozygous parents to CD patients at a  
 25 ratio of 2.5:1.

The invention relates to a isolated gene or nucleic acid molecule which comprises a single nucleotide polymorphism at a specific location. In a particular embodiment the invention relates to the variant allele of a gene having a single nucleotide polymorphism, which variant allele differs from a reference allele by one nucleotide at

the site(s) identified in Table 3. Complements of these nucleic acid segments are also included. The segments can be DNA or RNA, and can be double- or single-stranded. Segments can be, for example, 5-10, 5-15, 10-20, 5-25, 10-30, 10-50 or 10-100 bases long.

- 5           The invention further provides allele-specific oligonucleotides that hybridize to a gene comprising a single nucleotide polymorphism or to the complement of the gene. These oligonucleotides can be probes or primers.

10           The invention further provides a method of analyzing a nucleic acid from an individual. The method determines which base is present at any one of the polymorphic sites shown in Table 3. Optionally, a set of bases occupying a set of the polymorphic sites shown in Table 3 is determined. This type of analysis can be performed on a number of individuals, who are tested for the presence of a disease phenotype. The presence or absence of disease phenotype is then correlated with a base or set of bases present at the polymorphic site or sites in the individuals tested.

- 15           Thus, the invention further relates to a method of predicting the presence, absence, likelihood of the presence or absence, or severity of a particular phenotype or disorder associated with a particular genotype. The method comprises obtaining a nucleic acid sample from an individual and determining the identity of one or more bases (nucleotides) at polymorphic sites of genes described herein, wherein the presence of a particular base is correlated with a specified phenotype or disorder, thereby predicting the presence, absence, likelihood of the presence or absence, or severity of the phenotype or disorder in the individual. In one embodiment of the invention, the phenotype is inflammatory bowel disease or Crohn's disease.
- 20

#### BRIEF DESCRIPTION OF THE DRAWING

- 25           The Figure shows multipoint nonparametric linkage results for the IBD genome scan. Multipoint LOD scores were calculated using the MAPMAKER/SIBS functions implemented in GENHUNTER 2.0. The thick black line indicates the LOD score along the length of each chromosome, and the tick marks indicate the position of the

microsatellite markers. The two horizontal lines depict the genome-wide thresholds for suggestive (LOD = 2.0) and significant linkage.

#### DETAILED DESCRIPTION OF THE INVENTION

Crohn's disease (CD) and ulcerative colitis (UC) are chronic, idiopathic inflammatory disorders of the gastrointestinal tract. These inflammatory bowel diseases (IBD) have a peak incidence in early adulthood, and their combined prevalence is approximately 100-200/100,000. The inflammation in IBD is characterized by altered expression of both pro-inflammatory and immunoregulatory cytokines in the affected intestinal mucosa (Kmiec, *Arch Immunol Ther Expe (Warsz)* 46(3):143-155 (1998)). Genetic factors are believed to play an important role, as the sibling risk ( $\lambda_s$ ) calculated for IBD ranges from 15-40, with a stronger genetic contribution occurring for CD ( $\lambda_s \sim 35$ ) as compared to UC ( $\lambda_s \sim 15$ ). Additionally, relatives of individuals with IBD diagnosed at younger ages appear to be at an even higher risk.

CD is characterized by discontinuous, transmural inflammation affecting any part of the gastrointestinal tract and is manifested by abdominal pain, chronic diarrhea, weight loss, bowel obstructions and fistulae. UC occurs as a continuous, mucosal inflammation affecting only the large intestine with primary symptoms including diarrhea, rectal bleeding and abdominal pain. The search for susceptibility genes for these two diseases has resulted in the identification of two potential susceptibility loci. The first, called *IBD1*, is a CD-susceptibility locus that lies in the pericentromeric region of chromosome 16 (Hugo *et al.*, *Nature* 379:821-822 (1996)). The second (*IBD2*) is located in a 41 cM region surrounding marker D12S83 and appears to be linked to both CD and UC (Satsangi *et al.*, *Genetics* 14:199-202 (1996)). These putative loci, however, have only been replicated in some, but not all, subsequent studies (Cavanaugh *et al.*, *Proc Natl Acad Sci USA* 62:291-298 (1998); Cho *et al.*, *The National Academy of Sciences* 95:7502-7507 (1998); Curren *et al.*, *Gastroenterology* 115:1-7 (1998); Duerr *et al.*, *The American Society of Human Genetics* 63:95-100 (1998); Rioux *et al.*, *Am. J. Hum. Genet.* 63:1086-1094 (1998); Yang *et al.*,

*Gastroenterology* 109:440-448 (1995)), supporting the belief that there exists substantial genetic heterogeneity. Furthermore, *IBD1* and *IBD2* only account for a fraction of the heritability of IBD, suggesting that additional loci contribute to disease susceptibility. Thus, as described herein, the susceptibility loci in a Canadian IBD population was assessed by studying families with multiple affected siblings (McLeod *et al.*, *Dis Colon Rectum* 40:553-557 (1997)).

A genome-wide screen was performed on 181 IBD-affected sibling pairs (ASP) and 5 IBD-affected relative pairs (RP) from 163 families. Among these ASP, 122 were CD pairs, 25 were UC pairs, and 34 were “mixed” pairs (one sibling with either CD or UC, the other with CD, UC or IC). All ASP and available parents (140 families had both parents available, 17 had one parent available, and 1 was missing both parents), as well as all RP, were genotyped with 312 microsatellite markers covering the genome with approximately 12 cM distance between markers. Simulations of this dataset indicated that the genome-wide threshold for suggestive linkage (the score expected to occur one time at random in a genome scan) was at a LOD of 2.0. Using either this calculated threshold, or the published threshold of LOD 2.2 based on an infinitely dense map (Lander & Kruglyak, *Nature Genetics* 11:241-247 (1995)), multipoint nonparametric linkage analysis of these data revealed 4 loci which surpassed this threshold (Figure). Specifically, chromosome 3 had a peak LOD of 2.4 between markers D3S1766 and D#S1285, chromosome 5 a peak LOD of 3.0 between GATA68A03 and D5S816, chromosome 6 a peak LOD of 2.3 between D6S1019 and D6S1017, and chromosome 19 a peak LOD of 4.6 between GATA21G05 and D19S586. In fact this chromosome 19 locus exceeds the threshold for genome-wide significance of 3.6 (Lander & Kruglyak, *Nature Genetics* 11:241-247 (1995)), and represents a novel IBD susceptibility locus.

This novel locus maps to an extended region on 19p13 (Figure) that contains many different genes of immunologic interest such as intercellular adhesion molecule 1 (ICAM1), complement component 3 (C3), the thromboxane A2 receptor (TBXA2), leukotriene B4 hydroxylase (LTB4H), and the janus tyrosine kinases TYK2 and JAK3.

There is some evidence supporting their relevance in IBD susceptibility: 1) modest positive association results have been reported for the ICAM1 (Yang *et al.*, *Gastroenterology* 109:440-448 (1995)) and C3 molecules (Elmgreen *et al.*, *Acta Med Scand* 215(4):375-8 (1984)); 2) attempts to interfere with the TBXA2 (Taniguchi, 1997) and LTB4 (Hawkey *et al.*, *Agents Actions, Special Conference Issue* (1992)) mediated inflammatory pathways have shown some therapeutic value; and 3) the janus kinases have been shown to be important in the transduction of the molecular signal from cytokine receptors.

The finding of suggestive linkage to an approximately 30 cM region spanning the cytokine gene cluster on 5q31-q33, containing many of the immunoregulatory cytokines such as IL4, IL13, IL5 and IL3, led to the performance of higher density mapping in this region. Specifically, the original families and an additional 12 families were genotyped for 34 extra microsatellite markers. Multipoint nonparametric analysis were then performed using three different phenotypic categories: IBD, CD and CD16. In the first, all individuals with CD, UC or IC were designated as affected; in the second, only individuals with CD were designated as affected; in the third, only individuals with CD were designated as affected and only families with at least one affected sibling diagnosed at the age of 16 or younger were included. This last category was examined due to an expected enrichment for genetic factors over environmental causes. These analyses demonstrate the presence of a locus of genome-wide significance in the group with early onset CD (MLS = 3.9). Evidence for linkage to the syntenic region in mice has been reported in an induced model of colitis (Mahler, *Genomics* 55:147-156 (1999)).

Although the suggestive loci on chromosomes 3 and 6 identified as described herein have not yet been followed up with higher density mapping, it is important to note that the linkage peak on chromosome 3 is approximately 10 cM away from a previously reported suggestive locus (Satsangi *et al.*, *Nature Genetics* 14:199-202 (1996)), and the linkage peak on 6 lies approximately 20 cM centromeric to the major histocompatibility complex (MHC) Class II region. A recent study has described

linkage to this chromosome 6 region (Hampe *et al.*, *Am. J. Hum. Genet.* 64 (1999)), and a large meta-analysis of the results derived from 29 different studies has also reported that both CD and UC were associated with specific Class II alleles (Stokkers *et al.*, *Gut* 45:395-401 (1999)). Finally, in order to assess whether the *IBD1* and *IBD2* loci are contributing to the IBD susceptibility in this population, exclusion mapping of the data was performed. These analyses demonstrate that the entire chromosome 12 can be excluded for loci of even modest effects ( $\lambda_s > 1.5$ ), but can only loci conferring a  $\lambda_s > 4$  on chromosome 16 can be excluded, suggesting that *IBD1* ( $\lambda_s \sim 1.3$ ) could have gone undetected in the present study.

Thus, this work has identified two novel susceptibility loci: a locus on chromosome 5q31-33 that confers susceptibility to CD and a locus on chromosome 19p13 that confers susceptibility to IBD. Furthermore, particular SNPs within these loci have been identified which may be associated with disease susceptibility.

The present invention relates to a gene which comprises a single nucleotide polymorphism (SNP) at a specific location. The gene which includes the SNP has at least two alleles, referred to herein as the reference allele and the variant allele. The reference allele (prototypical or wild type allele) has been designated arbitrarily and typically corresponds to the nucleotide sequence of the gene which has been deposited with GenBank or TIGR under a given Accession number. The variant allele differs from the reference allele by one nucleotide at the site(s) identified in Table 3. The present invention also relates to variant alleles of the described genes and to complements of the variant alleles. The invention further relates to portions of the variant alleles and portions of complements of the variant alleles which comprise (encompass) the site of the SNP and are at least 5 nucleotides in length. Portions can be, for example, 5-10, 5-15, 10-20, 5-25, 10-30, 10-50 or 10-100 bases long. For example, a portion of a variant allele which is 21 nucleotides in length includes the single nucleotide polymorphism (the nucleotide which differs from the reference allele at that site) and twenty additional nucleotides which flank the site in the variant allele. These nucleotides can be on one or both sides of the polymorphism.



Polymorphisms which are the subject of this invention are defined in Table 3. The reference sequence for many of the genes or gene fragments is provided in Table 5. For sequences which are not present in Table 5, the skilled artisan can readily determine the specific location of the polymorphism given the 3' and 5' nucleotide sequence  
 5 flanking the polymorphic site provided in Table 3 and the chromosomal loci information provided herein. The nucleotide sequences of the invention can be double- or single-stranded.

The invention further provides allele-specific oligonucleotides that hybridize to a gene comprising a single nucleotide polymorphism or to the complement of the gene.  
 10 These oligonucleotides can be probes or primers.

The invention further provides a method of analyzing a nucleic acid from an individual. The method determines which base is present at any one of the polymorphic sites shown in Table 3. Optionally, a set of bases occupying a set of the polymorphic sites shown in Table 3 is determined. This type of analysis can be performed on a  
 15 number of individuals, who are tested for the presence of a disease phenotype. The presence or absence of disease phenotype is then correlated with a base or set of bases present at the polymorphic site or sites in the individuals tested.

Thus, the invention further relates to a method of predicting the presence, absence, likelihood of the presence or absence, or severity of a particular phenotype or disorder  
 20 associated with a particular genotype. The method comprises obtaining a nucleic acid sample from an individual and determining the identity of one or more bases (nucleotides) at polymorphic sites of genes described herein, wherein the presence of a particular base is correlated with a specified phenotype or disorder, thereby predicting the presence, absence, likelihood of the presence or absence, or severity of the  
 25 phenotype or disorder in the individual.

## DEFINITIONS

An oligonucleotide can be DNA or RNA, and single- or double-stranded. Oligonucleotides can be naturally occurring or synthetic, but are typically prepared by

synthetic means. Preferred oligonucleotides of the invention include segments of DNA, or their complements, which include any one of the polymorphic sites shown in Table 3. The segments can be between 5 and 250 bases, and, in specific embodiments, are between 5-10, 5-20, 10-20, 10-50, 20-50 or 10-100 bases. For example, the segment  
5 can be 21 bases. The polymorphic site can occur within any position of the segment. The segments can be from any of the allelic forms of DNA shown in Table 3.

As used herein, the terms "nucleotide", "base" and "nucleic acid" are intended to be equivalent. The terms "nucleotide sequence", "nucleic acid sequence", "nucleic acid molecule" and "segment" are intended to be equivalent.

10 Hybridization probes are oligonucleotides which bind in a base-specific manner to a complementary strand of nucleic acid. Such probes include peptide nucleic acids, as described in Nielsen *et al.*, *Science* 254, 1497-1500 (1991). Probes can be any length suitable for specific hybridization to the target nucleic acid sequence. The most appropriate length of the probe may vary depending upon the hybridization method in  
15 which it is being used; for example, particular lengths may be more appropriate for use in microfabricated arrays, while other lengths may be more suitable for use in classical hybridization methods. Such optimizations are known to the skilled artisan. Suitable probes and primers can range from about 5 nucleotides to about 30 nucleotides in length. For example, probes and primers can be 5, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24,  
20 25, 26, 28 or 30 nucleotides in length. The probe or primer preferably overlaps at least one polymorphic site occupied by any of the possible variant nucleotides. The nucleotide sequence can correspond to the coding sequence of the allele or to the complement of the coding sequence of the allele.

As used herein, the term "primer" refers to a single-stranded oligonucleotide  
25 which acts as a point of initiation of template-directed DNA synthesis under appropriate conditions (*e.g.*, in the presence of four different nucleoside triphosphates and an agent for polymerization, such as DNA or RNA polymerase or reverse transcriptase) in an appropriate buffer and at a suitable temperature. The appropriate length of a primer depends on the intended use of the primer, but typically ranges from 15 to 30

nucleotides. Short primer molecules generally require cooler temperatures to form sufficiently stable hybrid complexes with the template. A primer need not reflect the exact sequence of the template, but must be sufficiently complementary to hybridize with a template. The term primer site refers to the area of the target DNA to which a primer hybridizes. The term primer pair refers to a set of primers including a 5' (upstream) primer that hybridizes with the 5' end of the DNA sequence to be amplified and a 3' (downstream) primer that hybridizes with the complement of the 3' end of the sequence to be amplified.

As used herein, linkage describes the tendency of genes, alleles, loci or genetic markers to be inherited together as a result of their location on the same chromosome. It can be measured by percent recombination between the two genes, alleles, loci or genetic markers.

As used herein, polymorphism refers to the occurrence of two or more genetically determined alternative sequences or alleles in a population. A polymorphic marker or site is the locus at which divergence occurs. Preferred markers have at least two alleles, each occurring at frequency of greater than 1%, and more preferably greater than 10% or 20% of a selected population. A polymorphic locus may be as small as one base pair. Polymorphic markers include restriction fragment length polymorphisms, variable number of tandem repeats (VNTR's), hypervariable regions, minisatellites, dinucleotide repeats, trinucleotide repeats, tetranucleotide repeats, simple sequence repeats, and insertion elements such as Alu. The first identified allelic form is arbitrarily designated as the reference form and other allelic forms are designated as alternative or variant alleles. The allelic form occurring most frequently in a selected population is sometimes referred to as the wildtype form. Diploid organisms may be homozygous or heterozygous for allelic forms. A diallelic or biallelic polymorphism has two forms. A triallelic polymorphism has three forms.

Work described herein pertains to the resequencing of large numbers of genes in a large number of individuals to identify polymorphisms which can predispose individuals to disease, particularly IBD.

By altering amino acid sequence, SNPs may alter the function of the encoded proteins. The discovery of the SNP facilitates biochemical analysis of the variants and the development of assays to characterize the variants and to screen for pharmaceutical that would interact directly with on or another form of the protein. SNPs (including  
5 silent SNPs) may also alter the regulation of the gene at the transcriptional or post-transcriptional level. SNPs (including silent SNPs) also enable the development of specific DNA, RNA, or protein-based diagnostics that detect the presence or absence of the polymorphism in particular conditions.

A single nucleotide polymorphism occurs at a polymorphic site occupied by a  
10 single nucleotide, which is the site of variation between allelic sequences. The site is usually preceded by and followed by highly conserved sequences of the allele (e.g., sequences that vary in less than 1/100 or 1/1000 members of the populations).

A single nucleotide polymorphism usually arises due to substitution of one nucleotide for another at the polymorphic site. A transition is the replacement of one  
15 purine by another purine or one pyrimidine by another pyrimidine. A transversion is the replacement of a purine by a pyrimidine or vice versa. Single nucleotide polymorphisms can also arise from a deletion of a nucleotide or an insertion of a nucleotide relative to a reference allele. Typically the polymorphic site is occupied by a base other than the reference base. For example, where the reference allele contains the  
20 base "T" at the polymorphic site, the altered allele can contain a "C", "G" or "A" at the polymorphic site.

Hybridizations are usually performed under stringent conditions, for example, at a salt concentration of no more than 1 M and a temperature of at least 25°C. For example, conditions of 5X SSPE (750 mM NaCl, 50 mM NaPhosphate, 5 mM EDTA,  
25 pH 7.4) and a temperature of 25-30°C, or equivalent conditions, are suitable for allele-specific probe hybridizations. Equivalent conditions can be determined by varying one or more of the parameters given as an example, as known in the art, while maintaining a similar degree of identity or similarity between the target nucleotide sequence and the primer or probe used.

The term "isolated" is used herein to indicate that the material in question exists in a physical milieu distinct from that in which it occurs in nature. For example, an isolated nucleic acid of the invention may be substantially isolated with respect to the complex cellular milieu in which it naturally occurs. In some instances, the isolated material will form part of a composition (for example, a crude extract containing other substances), buffer system or reagent mix. In other circumstance, the material may be purified to essential homogeneity, for example as determined by PAGE or column chromatography such as HPLC. Preferably, an isolated nucleic acid comprises at least about 50, 80 or 90 percent (on a molar basis) of all macromolecular species present.

## 10 I. Novel Polymorphisms of the Invention

The novel polymorphisms of the invention are shown in Table 3.

## II. Analysis of Polymorphisms

### A. Preparation of Samples

Polymorphisms are detected in a target nucleic acid from an individual being analyzed. For assay of genomic DNA, virtually any biological sample (other than pure red blood cells) is suitable. For example, convenient tissue samples include whole blood, semen, saliva, tears, urine, fecal material, sweat, buccal, skin and hair. For assay of cDNA or mRNA, the tissue sample must be obtained from an organ in which the target nucleic acid is expressed. For example, if the target nucleic acid is a cytochrome P450, the liver is a suitable source.

Many of the methods described below require amplification of DNA from target samples. This can be accomplished by e.g., PCR. *See generally PCR Technology: Principles and Applications for DNA Amplification* (ed. H.A. Erlich, Freeman Press, NY, NY, 1992); *PCR Protocols: A Guide to Methods and Applications* (eds. Innis, *et al.*, Academic Press, San Diego, CA, 1990); Mattila *et al.*, *Nucleic Acids Res.* 19, 4967 (1991); Eckert *et al.*, *PCR Methods and Applications* 1, 17 (1991); *PCR* (eds. McPherson *et al.*, IRL Press, Oxford); and U.S. Patent 4,683,202.

Other suitable amplification methods include the ligase chain reaction (LCR) (see Wu and Wallace, *Genomics* 4, 560 (1989), Landegren *et al.*, *Science* 241, 1077 (1988), transcription amplification (Kwoh *et al.*, *Proc. Natl. Acad. Sci. USA* 86, 1173 (1989)), and self-sustained sequence replication (Guatelli *et al.*, *Proc. Nat. Acad. Sci. USA*, 87, 1874 (1990)) and nucleic acid based sequence amplification (NASBA). The latter two  
 5 amplification methods involve isothermal reactions based on isothermal transcription, which produce both single stranded RNA (ssRNA) and double stranded DNA (dsDNA) as the amplification products in a ratio of about 30 or 100 to 1, respectively.

#### B. Detection of Polymorphisms in Target DNA

10 The polymorphisms identified as described herein can be used as a platform for genotyping (i.e., determining the genotype of) individuals. This analysis determines which form(s) of a characterized (known) polymorphism are present in individuals under test. There are a variety of suitable procedures, which are discussed in turn.

##### 1. Allele-Specific Probes

15 The design and use of allele-specific probes for analyzing polymorphisms is described by e.g., Saiki *et al.*, *Nature* 324, 163-166 (1986); Dattagupta, EP 235,726, Saiki, WO 89/11548. Allele-specific probes can be designed that hybridize to a segment of target DNA from one individual but do not hybridize to the corresponding segment from another individual due to the presence of different polymorphic forms in  
 20 the respective segments from the two individuals. Hybridization conditions should be sufficiently stringent that there is a significant difference in hybridization intensity between alleles, and preferably an essentially binary response, whereby a probe hybridizes to only one of the alleles. Some probes are designed to hybridize to a segment of target DNA such that the polymorphic site aligns with a central position  
 25 (e.g., in a 15-mer at the 7 position; in a 16-mer, at either the 8 or 9 position) of the probe. This design of probe achieves good discrimination in hybridization between different allelic forms.

Allele-specific probes are often used in pairs, one member of a pair showing a perfect match to a reference form of a target sequence and the other member showing a perfect match to a variant form. Several pairs of probes can then be immobilized on the same support for simultaneous analysis of multiple polymorphisms within the same target sequence.

## 2. Tiling Arrays

The polymorphisms can also be identified by hybridization to nucleic acid arrays, some examples of which are described in WO 95/11995. One form of such arrays is described in the Examples section in connection with de novo identification of polymorphisms. The same array or a different array can be used for analysis of characterized polymorphisms. WO 95/11995 also describes subarrays that are optimized for detection of a variant form of a precharacterized polymorphism. Such a subarray contains probes designed to be complementary to a second reference sequence, which is an allelic variant of the first reference sequence. The second group of probes is designed by the same principles as described in the Examples, except that the probes exhibit complementarity to the second reference sequence. The inclusion of a second group (or further groups) can be particularly useful for analyzing short subsequences of the primary reference sequence in which multiple mutations are expected to occur within a short distance commensurate with the length of the probes (e.g., two or more mutations within 9 to 21 bases).

## 3. Allele-Specific Primers

An allele-specific primer hybridizes to a site on target DNA overlapping a polymorphism and only primes amplification of an allelic form to which the primer exhibits perfect complementarity. See Gibbs, *Nucleic Acid Res.* 17, 2427-2448 (1989). This primer is used in conjunction with a second primer which hybridizes at a distal site. Amplification proceeds from the two primers, resulting in a detectable product which indicates the particular allelic form is present. A control is usually performed with a

second pair of primers, one of which shows a single base mismatch at the polymorphic site and the other of which exhibits perfect complementarity to a distal site. The single-base mismatch prevents amplification and no detectable product is formed. The method works best when the mismatch is included in the 3'-most position of the oligonucleotide  
5 aligned with the polymorphism because this position is most destabilizing to elongation from the primer (see, e.g., WO 93/22456).

#### 4. Direct-Sequencing

The direct analysis of the sequence of polymorphisms of the present invention can be accomplished using either the dideoxy chain termination method or the Maxam -  
10 Gilbert method (see Sambrook *et al.*, *Molecular Cloning, A Laboratory Manual* (2nd Ed., CSHP, New York 1989); Zyskind *et al.*, *Recombinant DNA Laboratory Manual*, (Acad. Press, 1988)).

#### 5. Denaturing Gradient Gel Electrophoresis

Amplification products generated using the polymerase chain reaction can be  
15 analyzed by the use of denaturing gradient gel electrophoresis. Different alleles can be identified based on the different sequence-dependent melting properties and electrophoretic migration of DNA in solution. Erlich, ed., *PCR Technology, Principles and Applications for DNA Amplification*, (W.H. Freeman and Co, New York, 1992), Chapter 7.

#### 20 6. Single-Strand Conformation Polymorphism Analysis

Alleles of target sequences can be differentiated using single-strand conformation polymorphism analysis, which identifies base differences by alteration in electrophoretic migration of single stranded PCR products, as described in Orita *et al.*, *Proc. Nat. Acad. Sci.* 86, 2766-2770 (1989). Amplified PCR products can be generated as described  
25 above, and heated or otherwise denatured, to form single stranded amplification products. Single-stranded nucleic acids may refold or form secondary structures which



are partially dependent on the base sequence. The different electrophoretic mobilities of single-stranded amplification products can be related to base-sequence differences between alleles of target sequences.

## 7. Single Base Extension

- 5 An alternative method for identifying and analyzing polymorphisms is based on single-base extension (SBE) of a fluorescently-labeled primer coupled with fluorescence resonance energy transfer (FRET) between the label of the added base and the label of the primer. Typically, the method, such as that described by Chen *et al.*, (*PNAS* 94:10756-61 (1997), incorporated herein by reference) uses a locus-specific  
10 oligonucleotide primer labeled on the 5' terminus with 5-carboxyfluorescein (FAM). This labeled primer is designed so that the 3' end is immediately adjacent to the polymorphic site of interest. The labeled primer is hybridized to the locus, and single base extension of the labeled primer is performed with fluorescently labeled  
15 dideoxyribonucleotides (ddNTPs) in dye-terminator sequencing fashion, except that no deoxyribonucleotides are present. An increase in fluorescence of the added ddNTP in response to excitation at the wavelength of the labeled primer is used to infer the identity of the added nucleotide.

## III. Methods of Use

- After determining polymorphic form(s) present in an individual at one or more  
20 polymorphic sites, this information can be used in a number of methods.

### A. Forensics

- Determination of which polymorphic forms occupy a set of polymorphic sites in an individual identifies a set of polymorphic forms that distinguishes the individual. *See generally* National Research Council, *The Evaluation of Forensic DNA Evidence* (Eds.  
25 Pollard *et al.*, National Academy Press, DC, 1996). The more sites that are analyzed, the lower the probability that the set of polymorphic forms in one individual is the same

as that in an unrelated individual. Preferably, if multiple sites are analyzed, the sites are  
 5   unlinked. Thus, polymorphisms of the invention are often used in conjunction with  
 polymorphisms in distal genes. Preferred polymorphisms for use in forensics are  
 biallelic because the population frequencies of two polymorphic forms can usually be  
 determined with greater accuracy than those of multiple polymorphic forms at multi-  
 allelic loci.

The capacity to identify a distinguishing or unique set of forensic markers in an  
 individual is useful for forensic analysis. For example, one can determine whether a  
 blood sample from a suspect matches a blood or other tissue sample from a crime scene  
 10   by determining whether the set of polymorphic forms occupying selected polymorphic  
 sites is the same in the suspect and the sample. If the set of polymorphic markers does  
 not match between a suspect and a sample, it can be concluded (barring experimental  
 error) that the suspect was not the source of the sample. If the set of markers does  
 match, one can conclude that the DNA from the suspect is consistent with that found at  
 15   the crime scene. If frequencies of the polymorphic forms at the loci tested have been  
 determined (e.g., by analysis of a suitable population of individuals), one can perform a  
 statistical analysis to determine the probability that a match of suspect and crime scene  
 sample would occur by chance.

$p(ID)$  is the probability that two random individuals have the same polymorphic or  
 20   allelic form at a given polymorphic site. In biallelic loci, four genotypes are possible:  
 AA, AB, BA, and BB. If alleles A and B occur in a haploid genome of the organism  
 with frequencies  $x$  and  $y$ , the probability of each genotype in a diploid organism is (see  
 WO 95/12607):

Homozygote:  $p(AA) = x^2$   
 25   Homozygote:  $p(BB) = y^2 = (1-x)^2$   
 Single Heterozygote:  $p(AB) = p(BA) = xy = x(1-x)$   
 Both Heterozygotes:  $p(AB+BA) = 2xy = 2x(1-x)$

The probability of identity at one locus (i.e, the probability that two individuals, picked at random from a population will have identical polymorphic forms at a given locus) is given by the equation:

$$p(ID) = (x^2)^2 + (2xy)^2 + (y^2)^2.$$

- 5        These calculations can be extended for any number of polymorphic forms at a given locus. For example, the probability of identity p(ID) for a 3-allele system where the alleles have the frequencies in the population of x, y and z, respectively, is equal to the sum of the squares of the genotype frequencies:

$$p(ID) = x^4 + (2xy)^2 + (2yz)^2 + (2xz)^2 + z^4 + y^4$$

- 10       In a locus of n alleles, the appropriate binomial expansion is used to calculate p(ID) and p(exc).

The cumulative probability of identity (cum p(ID)) for each of multiple unlinked loci is determined by multiplying the probabilities provided by each locus.

$$\text{cum } p(ID) = p(ID1)p(ID2)p(ID3).... p(IDn)$$

- 15       The cumulative probability of non-identity for n loci (i.e. the probability that two random individuals will be different at 1 or more loci) is given by the equation:

$$\text{cum } p(\text{nonID}) = 1-\text{cum } p(ID).$$

If several polymorphic loci are tested, the cumulative probability of non-identity for random individuals becomes very high (e.g., one billion to one). Such probabilities

- 20       can be taken into account together with other evidence in determining the guilt or innocence of the suspect.

B. Paternity Testing

The object of paternity testing is usually to determine whether a male is the father of a child. In most cases, the mother of the child is known and thus, the mother's

- 25       contribution to the child's genotype can be traced. Paternity testing investigates whether the part of the child's genotype not attributable to the mother is consistent with that of

the putative father. Paternity testing can be performed by analyzing sets of polymorphisms in the putative father and the child.

If the set of polymorphisms in the child attributable to the father does not match the set of polymorphisms of the putative father, it can be concluded, barring  
 5 experimental error, that the putative father is not the real father. If the set of polymorphisms in the child attributable to the father does match the set of polymorphisms of the putative father, a statistical calculation can be performed to determine the probability of coincidental match.

The probability of parentage exclusion (representing the probability that a random  
 10 male will have a polymorphic form at a given polymorphic site that makes him incompatible as the father) is given by the equation (see WO 95/12607):

$$p(\text{exc}) = xy(1-xy)$$

where x and y are the population frequencies of alleles A and B of a biallelic polymorphic site.

15 (At a triallelic site  $p(\text{exc}) = xy(1-xy) + yz(1-yz) + xz(1-xz) + 3xyz(1-xyz)$ ), where x, y and z are the respective population frequencies of alleles A, B and C).

The probability of non-exclusion is

$$p(\text{non-exc}) = 1 - p(\text{exc})$$

The cumulative probability of non-exclusion (representing the value obtained  
 20 when n loci are used) is thus:

$$\text{cum } p(\text{non-exc}) = p(\text{non-exc1})p(\text{non-exc2})p(\text{non-exc3})\dots p(\text{non-excn})$$

The cumulative probability of exclusion for n loci (representing the probability that a random male will be excluded)

$$\text{cum } p(\text{exc}) = 1 - \text{cum } p(\text{non-exc}).$$

25 If several polymorphic loci are included in the analysis, the cumulative probability of exclusion of a random male is very high. This probability can be taken into account in assessing the liability of a putative father whose polymorphic marker set matches the child's polymorphic marker set attributable to his/her father.

### C. Correlation of Polymorphisms with Phenotypic Traits

The polymorphisms of the invention may contribute to the phenotype of an organism in different ways. Some polymorphisms occur within a protein coding sequence and contribute to phenotype by affecting protein structure. The effect may be neutral, beneficial or detrimental, or both beneficial and detrimental, depending on the circumstances. For example, a heterozygous sickle cell mutation confers resistance to malaria, but a homozygous sickle cell mutation is usually lethal. Other polymorphisms occur in noncoding regions but may exert phenotypic effects indirectly via influence on replication, transcription, and translation. A single polymorphism may affect more than one phenotypic trait. Likewise, a single phenotypic trait may be affected by polymorphisms in different genes. Further, some polymorphisms predispose an individual to a distinct mutation that is causally related to a certain phenotype. For example, the polymorphisms identified herein and shown in Table 3 are present in the chromosomal loci which have been identified as described herein as conferring susceptibility to IBD such as CD and UC.

Correlation is performed for a population of individuals who have been tested for the presence or absence of a phenotypic trait of interest and for polymorphic markers sets. To perform such analysis, the presence or absence of a set of polymorphisms (i.e. a polymorphic set) is determined for a set of the individuals, some of whom exhibit a particular trait, and some of which exhibit lack of the trait. The alleles of each polymorphism of the set are then reviewed to determine whether the presence or absence of a particular allele is associated with the trait of interest. Correlation can be performed by standard statistical methods such as a  $\kappa$ -squared test and statistically significant correlations between polymorphic form(s) and phenotypic characteristics are noted. For example, it might be found that the presence of allele A1 at polymorphism A correlates with heart disease. As a further example, it might be found that the combined presence of allele A1 at polymorphism A and allele B1 at polymorphism B correlates with increased susceptibility to IBD (e.g., CD and UC).

Such correlations can be exploited in several ways. In the case of a strong correlation between a set of one or more polymorphic forms and a disease for which treatment is available, detection of the polymorphic form set in a human or animal patient may justify immediate administration of treatment, or at least the institution of

5 regular monitoring of the patient. Detection of a polymorphic form correlated with serious disease in a couple contemplating a family may also be valuable to the couple in their reproductive decisions. For example, the female partner might elect to undergo *in vitro* fertilization to avoid the possibility of transmitting such a polymorphism from her husband to her offspring. In the case of a weaker, but still statistically significant

10 correlation between a polymorphic set and human disease, immediate therapeutic intervention or monitoring may not be justified. Nevertheless, the patient can be motivated to begin simple life-style changes (e.g., diet, exercise) that can be accomplished at little cost to the patient but confer potential benefits in reducing the risk of conditions to which the patient may have increased susceptibility by virtue of variant

15 alleles. Identification of a polymorphic set in a patient correlated with enhanced receptiveness to one of several treatment regimes for a disease indicates that this treatment regime should be followed.

For animals and plants, correlations between characteristics and phenotype are useful for breeding for desired characteristics. For example, Beitz *et al.*, US 5,292,639

20 discuss use of bovine mitochondrial polymorphisms in a breeding program to improve milk production in cows. To evaluate the effect of mtDNA D-loop sequence polymorphism on milk production, each cow was assigned a value of 1 if variant or 0 if wildtype with respect to a prototypical mitochondrial DNA sequence at each of 17

locations considered. Each production trait was analyzed individually with the

25 following animal model:

$$Y_{ijkpn} = \mu + YS_i + P_j + X_k + \beta_1 + \dots \beta_{17} + PE_n + a_n + e_p$$

where  $Y_{ijkpn}$  is the milk, fat, fat percentage, SNF, SNF percentage, energy concentration, or lactation energy record;  $\mu$  is an overall mean;  $YS_i$  is the effect common to all cows calving in year-season;  $X_k$  is the effect common to cows in either the high or average

selection line;  $\beta_1$  to  $\beta_{17}$  are the binomial regressions of production record on mtDNA D-loop sequence polymorphisms;  $PE_n$  is permanent environmental effect common to all records of cow  $n$ ;  $a_n$  is effect of animal  $n$  and is composed of the additive genetic contribution of sire and dam breeding values and a Mendelian sampling effect; and  $e_p$  is a random residual. It was found that eleven of seventeen polymorphisms tested influenced at least one production trait. Bovines having the best polymorphic forms for milk production at these eleven loci are used as parents for breeding the next generation of the herd.

D. Genetic Mapping of Phenotypic Traits

The previous section concerns identifying correlations between phenotypic traits (e.g., IBD) and polymorphisms that directly or indirectly contribute to those traits, such as those identified in Table 3. The present section describes identification of a physical linkage between a genetic locus associated with a trait of interest and polymorphic markers that are not associated with the trait, but are in physical proximity with the genetic locus responsible for the trait and co-segregate with it. Such analysis is useful for mapping a genetic locus associated with a phenotypic trait to a chromosomal position, and thereby cloning gene(s) responsible for the trait. See Lander *et al.*, *Proc. Natl. Acad. Sci. (USA)* 83, 7353-7357 (1986); Lander *et al.*, *Proc. Natl. Acad. Sci. (USA)* 84, 2363-2367 (1987); Donis-Keller *et al.*, *Cell* 51, 319-337 (1987); Lander *et al.*, *Genetics* 121, 185-199 (1989)). Genes localized by linkage can be cloned by a process known as directional cloning. See Wainwright, *Med. J. Australia* 159, 170-174 (1993); Collins, *Nature Genetics* 1, 3-6 (1992).

Linkage studies are typically performed on members of a family. Available members of the family are characterized for the presence or absence of a phenotypic trait and for a set of polymorphic markers. The distribution of polymorphic markers in an informative meiosis is then analyzed to determine which polymorphic markers co-segregate with a phenotypic trait. See, e.g., Kerem *et al.*, *Science* 245, 1073-1080

(1989); Monaco *et al.*, *Nature* 316, 842 (1985); Yamoka *et al.*, *Neurology* 40, 222-226 (1990); Rossiter *et al.*, *FASEB Journal* 5, 21-27 (1991).

Linkage is analyzed by calculation of LOD (log of the odds) values. A lod value is the relative likelihood of obtaining observed segregation data for a marker and a genetic locus when the two are located at a recombination fraction  $\theta$ , versus the situation in which the two are not linked, and thus segregating independently (Thompson & Thompson, *Genetics in Medicine* (5th ed, W.B. Saunders Company, Philadelphia, 1991); Strachan, "Mapping the human genome" in *The Human Genome* (BIOS Scientific Publishers Ltd, Oxford), Chapter 4). A series of likelihood ratios are calculated at various recombination fractions ( $\theta$ ), ranging from  $\theta = 0.0$  (coincident loci) to  $\theta = 0.50$  (unlinked). Thus, the likelihood at a given value of  $\theta$  is: probability of data if loci linked at  $\theta$  to probability of data if loci unlinked. The computed likelihoods are usually expressed as the  $\log_{10}$  of this ratio (i.e., a lod score). For example, a lod score of 3 indicates 1000:1 odds against an apparent observed linkage being a coincidence.

The use of logarithms allows data collected from different families to be combined by simple addition. Computer programs are available for the calculation of lod scores for differing values of  $\theta$  (e.g., LIPED, MLINK (Lathrop, *Proc. Nat. Acad. Sci. (USA)* 81, 3443-3446 (1984)). For any particular lod score, a recombination fraction may be determined from mathematical tables. See Smith *et al.*, *Mathematical tables for research workers in human genetics* (Churchill, London, 1961); Smith, *Ann. Hum. Genet.* 32, 127-150 (1968). The value of  $\theta$  at which the lod score is the highest is considered to be the best estimate of the recombination fraction.

Positive lod score values suggest that the two loci are linked, whereas negative values suggest that linkage is less likely (at that value of  $\theta$ ) than the possibility that the two loci are unlinked. By convention, a combined lod score of +3 or greater (equivalent to greater than 1000:1 odds in favor of linkage) is considered definitive evidence that two loci are linked. Similarly, by convention, a negative lod score of -2 or less is taken as definitive evidence against linkage of the two loci being compared. Negative linkage



data are useful in excluding a chromosome or a segment thereof from consideration. The search focuses on the remaining non-excluded chromosomal locations.

#### IV. Modified Polypeptides and Gene Sequences

The invention further provides variant forms of nucleic acids and corresponding  
 5 proteins. The nucleic acids comprise one of the sequences described in Table 3, in which the polymorphic position is occupied by one of the alternative bases for that position. Some nucleic acids encode full-length variant forms of proteins. Similarly, variant proteins have the prototypical amino acid sequences encoded by nucleic acid sequences shown in Table 3, (read so as to be in-frame with the full-length coding  
 10 sequence of which it is a component) except at an amino acid encoded by a codon including one of the polymorphic positions shown in Table 3. That position is occupied by the amino acid coded by the corresponding codon in any of the alternative forms shown in Table 3.

Variant genes can be expressed in an expression vector in which a variant gene is  
 15 operably linked to a native or other promoter. Usually, the promoter is a eukaryotic promoter for expression in a mammalian cell. The transcription regulation sequences typically include a heterologous promoter and optionally an enhancer which is recognized by the host. The selection of an appropriate promoter, for example trp, lac, phage promoters, glycolytic enzyme promoters and tRNA promoters, depends on the  
 20 host selected. Commercially available expression vectors can be used. Vectors can include host-recognized replication systems, amplifiable genes, selectable markers, host sequences useful for insertion into the host genome, and the like.

The means of introducing the expression construct into a host cell varies depending upon the particular construction and the target host. Suitable means include  
 25 fusion, conjugation, transfection, transduction, electroporation or injection, as described in Sambrook, *supra*. A wide variety of host cells can be employed for expression of the variant gene, both prokaryotic and eukaryotic. Suitable host cells include bacteria such as *E. coli*, yeast, filamentous fungi, insect cells, mammalian cells, typically

immortalized, *e.g.*, mouse, CHO, human and monkey cell lines and derivatives thereof. Preferred host cells are able to process the variant gene product to produce an appropriate mature polypeptide. Processing includes glycosylation, ubiquitination, disulfide bond formation, general post-translational modification, and the like. As used  
5 herein, "gene product" includes mRNA, peptide and protein products.

The protein may be isolated by conventional means of protein biochemistry and purification to obtain a substantially pure product, *i.e.*, 80, 95 or 99% free of cell component contaminants, as described in Jacoby, *Methods in Enzymology* Volume 104, Academic Press, New York (1984); Scopes, *Protein Purification, Principles and*  
10 *Practice*, 2nd Edition, Springer-Verlag, New York (1987); and Deutscher (ed), *Guide to Protein Purification, Methods in Enzymology*, Vol. 182 (1990). If the protein is secreted, it can be isolated from the supernatant in which the host cell is grown. If not secreted, the protein can be isolated from a lysate of the host cells.

The invention further provides transgenic nonhuman animals capable of  
15 expressing an exogenous variant gene and/or having one or both alleles of an endogenous variant gene inactivated. Expression of an exogenous variant gene is usually achieved by operably linking the gene to a promoter and optionally an enhancer, and microinjecting the construct into a zygote. *See Hogan et al.*, "Manipulating the Mouse Embryo, A Laboratory Manual," Cold Spring Harbor Laboratory. Inactivation  
20 of endogenous variant genes can be achieved by forming a transgene in which a cloned variant gene is inactivated by insertion of a positive selection marker. *See Capecchi, Science* 244, 1288-1292 (1989). The transgene is then introduced into an embryonic stem cell, where it undergoes homologous recombination with an endogenous variant gene. Mice and other rodents are preferred animals. Such animals provide useful drug  
25 screening systems.

In addition to substantially full-length polypeptides expressed by variant genes, the present invention includes biologically active fragments of the polypeptides, or analogs thereof, including organic molecules which simulate the interactions of the peptides. Biologically active fragments include any portion of the full-length

polypeptide which confers a biological function on the variant gene product, including ligand binding, and antibody binding. Ligand binding includes binding by nucleic acids, proteins or polypeptides, small biologically active molecules, or large cellular structures.

Polyclonal and/or monoclonal antibodies that specifically bind to variant gene products but not to corresponding prototypical gene products are also provided. Antibodies can be made by injecting mice or other animals with the variant gene product or synthetic peptide fragments thereof. Monoclonal antibodies are screened as are described, for example, in Harlow & Lane, *Antibodies, A Laboratory Manual*, Cold Spring Harbor Press, New York (1988); Goding, *Monoclonal antibodies, Principles and Practice* (2d ed.) Academic Press, New York (1986). Monoclonal antibodies are tested for specific immunoreactivity with a variant gene product and lack of immunoreactivity to the corresponding prototypical gene product. These antibodies are useful in diagnostic assays for detection of the variant form, or as an active ingredient in a pharmaceutical composition.

## 15 V. Kits

The invention further provides kits comprising at least one allele-specific oligonucleotide as described herein. Often, the kits contain one or more pairs of allele-specific oligonucleotides hybridizing to different forms of a polymorphism. In some kits, the allele-specific oligonucleotides are provided immobilized to a substrate. For example, the same substrate can comprise allele-specific oligonucleotide probes for detecting at least 10, 100 or all of the polymorphisms shown in Table 3. Optional additional components of the kit include, for example, restriction enzymes, reverse-transcriptase or polymerase, the substrate nucleoside triphosphates, means used to label (for example, an avidin-enzyme conjugate and enzyme substrate and chromogen if the label is biotin), and the appropriate buffers for reverse transcription, PCR, or hybridization reactions. Usually, the kit also contains instructions for carrying out the methods.

The following Examples are offered for the purpose of illustrating the present invention and are not to be construed to limit the scope of this invention. The teachings of all references cited herein are hereby incorporated herein by reference.

### EXAMPLES

5        With the goal of identifying IBD susceptibility genes, a genomewide scan was undertaken in 163 pedigrees, and three regions of suggestive linkage (3, 5q31-33, 6p) and one of significant linkage to 19p13 (LOD = 4.6) were identified. Higher density mapping in the suggestive 5q31-33 region revealed a CD susceptibility locus of genome-wide significance (LOD = 3.9). Importantly, the 5q31-p33 localizes to the  
10    major immunoregulatory cytokine gene cluster and the 19p13 locus to a region containing numerous genes encoding cytokine/chemokine receptors and other inflammatory-associated molecules that could have a direct role in disease susceptibility.

      In order to pursue the evidence of linkage to chromosome 5, a systematic linkage  
15    disequilibrium (LD) approach was adopted. The approach that was used in the first stage of LD mapping was to genotype all known microsatellite markers in the 18 cM between D5S1435 and D5S1480, as these two markers delimit a region of a 2 LOD drop on either side of the linkage peak centered at marker D5S2497. All alleles for each marker were examined for evidence of excess transmission from heterozygous parents  
20    to CD child using the transmission disequilibrium test (TDT). Only alleles at two of the 57 markers had significant  $C^2$  results ( $p < 0.001$ ): IRF1p1 ( $C^2 = 13.3$ ,  $p = 0.0003$ ) and D5S1984 ( $C^2 = 14.0$ ,  $p = 0.0002$ ) (Table 1). A second stage of mapping was then undertaken to confirm, as well as to better delimit, the region of LD surrounding IRF1p1 and D5S1984. The development of new microsatellite markers was necessary.  
25    The marker with the most significant  $C^2$  result was CAh17a ( $C^2 = 16.2$ ,  $p = 0.00006$ ) and was located between IRF1p1 and D5S1984 (Table 2). Furthermore, the alleles 193, 156, 373, 140, 222, and 307 at markers GAh18a, IRF1p, CAh15a, CAh17a, D5S1984, CSF2p10, respectively, define a haplotype conferring susceptibility to Crohn's disease

(CD). In order to identify the sequence variant that would explain the genetic susceptibility to CD provided by this haplotype, a search was performed for all single nucleotide polymorphisms (SNPs) in this region of LD. The SNP discovery was accomplished by direct sequencing of overlapping PCR products amplified from DNA samples from eight individuals (six CD patients, one unaffected family member, and one CEPH DNA as control). Table 3 shows the results of the SNP discovery analyses.

139 triads were genotyped for a total of 241 SNPs thus far, where at least 50 trios were fully genotyped. Using a  $C^2$  value of 13 (corresponding to a p-value of 0.05) as threshold, 12 SNPs were found to have a significant level of association with CD and extended over a region of 250 kb, from IRF1 to prolyl4 hydroxylase. These were markers IGR2055a\_1, IGR2060a\_1, IGR2063b\_1, IGR2069a\_2, IGR2078a\_1, IGR2096a\_1, IGR2198a\_1, IGR2230a\_1, IGR2277a\_1, IGR3081a\_1, IGR3096a\_1, PROLYLex3\_1 (see Table 4). Any of these best SNPs by themselves are in strong association with CD and fully explain the microsatellite LD observations. Furthermore, the best SNPs have nearly identical association characteristics (that is, the allele at one SNP determines the allele of all others on any phased chromosome), confirming that a single risk haplotype extending approximately 250 kb is the source of all the observations of association in this region. Specifically, this haplotype is defined by the alleles G, C, G, T, A, A, G, T, G, G, C, T at markers IGR2055a\_1, IGR2060a\_1, IGR2063b\_1, IGR2069a\_2, IGR2078a\_1, IGR2096a\_1, IGR2198a\_1, IGR2230a\_1, IGR2277a\_1, IGR3081a\_1, IGR3096a\_1, PROLYLex3\_1, respectively. The frequency of this haplotype is estimated to be approximately 37% in the general population. Furthermore, this haplotype is transmitted from heterozygous parents to CD patients at a ratio of 2.5:1.

**Families**

For the linkage study, multicase families with 2 or more siblings affected by IBD were identified by review of clinical charts of all patients registered in the Mount Sinai

Hospital Inflammatory Bowel Disease Unit patient database and from the Hospital for Sick Children IBD database. Patients were also referred by physicians in the Greater Toronto Area (GTA). To confirm and update information obtained from these records, all patients were sent a questionnaire inquiring about the presence of a family history of IBD. Individuals identified as having other affected first-degree relatives were invited to participate and asked for permission to contact other affected and unaffected family members. Endoscopic, histological and radiological reports as well as clinical data were obtained on all affected individuals and these reports were reviewed for verification of diagnosis based upon standard criteria. Venous blood sampling was performed on affected individuals and their parents, and DNA was extracted using a salting out procedure. Ethics approval for this study was given by the University of Toronto Ethics Committee and written informed consent was obtained from all participants.

All of the LD analyses in this study were performed with father-mother-affected child (CD only) triads, where 0 or 1 of the parents was affected with CD. These triads either came from the multicase families used in the linkage stage of this study or were identified specifically for the purpose of the LD study. Specifically, for the microsatellite genotyping, 296 triads were genotyped: 95 of these triads were derived from families used in the original identification of the IBD5 locus (only one triad per family), and 201 were from newly collected families. For the SNP genotyping, 139 triads were genotyped: 18 were derived from families used in the original identification of the IBD5 locus, and 121 were from the newly collected families. Individuals affected by CD were identified by review of the clinical charts of all patients registered in the Mount Sinai Hospital Inflammatory Bowel Disease Centre patient database and from the Toronto Hospital for Sick Children IBD database. Written informed consent was obtained from all participants and ethics approval for this study was granted by the University of Toronto Ethics Committee.

### Microsatellite Genotyping

Genomic DNA was extracted from peripheral blood lymphocytes from probands and family members from 163 Caucasian pedigrees. The genome-wide scan, with an average inter-marker spacing of 12 cM, was carried out using a modified version of the

5 Cooperative Human Linkage Centre (CHLC) Screening Set/version 6.0 that also included Genethon markers. These 312 loci were amplified using fluorescently-labeled primers (Research Genetics Inc., Huntsville AL) in

separate polymerase chain reactions, and the products were then multiplexed into panels by pooling before electrophoresis on ABI 377 sequencers (PE Applied Biosystems,

10 Foster City, CA). Fluorescent genotyping gels were analyzed in an automated system developed at the Whitehead Institute/MIT Center for Genome Research. Further details of the genotyping system have previously been described (Rioux *et al.*, *Gastroenterology* 115:1062-1065 (1998)).

The region of suggestive linkage on chromosome 5 and the surrounding regions of

15 poor information content were followed up with 34 additional microsatellite markers. Specifically, 34 markers were genotyped between markers D5S1470 and D5S1471, decreasing the average spacing between markers to approximately 3 cM in this 125 cM region. This higher density mapping was performed on the original samples and on additional 12 families, for a total of 175

20 pedigrees analyzed. These new families consisted of 16 CD affected sibpairs.

In the first phase of the microsatellite LD mapping, a total of 57 microsatellite markers were genotyped on 296 CD triads. Information regarding primer sequence, allele size range, and suggested amplification conditions for 55 of these genetic markers (all but IRF1p1 and CSF2p10) can be obtained from the Genethon

25 (<http://www.genethon.fr/>), Marshfield (<http://research.marshfieldclinic.org/genetics/>), or Genome Database (<http://www.genethon.fr/>) World Wide Web sites. The markers IRF1p1, CSF2p1, and the 8 markers used in the 2nd stage of LD mapping, were designed during the course of this study. Genotypes for all of these markers were obtained as described above.

**SNP Discovery**

In order to identify all SNPs in the *IBD5* critical region, a tiling path of overlapping PCR products was designed. Specifically, PCR assays were designed using Primer 3.0 to be approximately 700 bp in length, with 100 bp overlap with adjacent assays. The -21 M13 forward and the -28 M13 reverse sequences were added to each of the forward and reverse PCR primers, respectively. These PCR primers were used to amplify 50 ng of genomic DNA from six CD patients, one unaffected family member, and one CEPH DNA as control. The PCR products were purified using the solid phase reversible immobilization (SPRI) method and then sequenced using the appropriate -21 M13 or -28 M13 DYEnamic Direct Cycle Sequencing kit (Amersham Pharmacia Biotech Ltd, Cleveland, OH). All sequencing reactions were run on ABI377 automated sequencers (PE Applied BioSystems, Foster City, CA); the gel files were processed using the BASS software, available on the Whitehead Institute/MIT Center for Genome Research FTP site. Sequences were base-called by the Phred program, and then the forward and reverse reads were assembled by the Phrap program. All traces were visually inspected by at least two observers.

**SNP genotyping**

SNP genotyping was performed using length-multiplexed single-base extension (LM-SBE) as previously described. Briefly, PCR primers were designed as close as possible to the SNPs identified in the current study, resulting in a product of a maximum length of 150 bp. Forward primers had T7 tails at their 5' ends and reverse primers had T3 tails at their 5' ends. These T7 and T3 tails were used for secondary amplification. Primer pairs were checked for homology to all amplicons and sorted into pools consisting of up to 50 primer pairs. Loci were subjected to two rounds of PCR amplification. In the first round, 10 ng of genomic DNA was amplified using a pool of primer pairs (0.1 mM) and 2.5 units of Amplitaq Gold (Perkin Elmer). In the second round, a 3 mL aliquot of the primary amplification product was amplified with biotinylated-T7 and biotinylated-T3 primers. A 7 mL aliquot of this secondary



amplification product was purified from the unincorporated dNTPs using streptavidin-coated Dynabeads (Dynal). A multiplex SBE reaction was then carried out on the purified product using SNP-specific primers, JOE-ddATP (0.12 M), TAMRA-ddCTP (0.12 M), FAM-ddGTP (0.12 M), ROX-ddUTP (0.60 M; NEN DuPont) and  
5 Thermosequenase (0.5 U; Amersham). Excess ddNTPs were removed from the SBE products using 96-well gel filtration blocks (Edge Biosystems) prior to electrophoresis on ABI 377 sequencers. The SBE gels were analyzed using a system developed at the Whitehead Institute/MIT Center for Genome Research as previously described.

**Statistical analysis**

10 Nonparametric multipoint linkage analysis of the data from the genome-wide scan and the higher density mapping on chromosome 5 was performed using the MAPMAKER/SIBS functions implemented in GENHUNTER 2.0. It is important to note that all sib pairs from sibships with more than 2 affecteds were counted but were conservatively downweighted by a factor of 2/n (where n = the number of affecteds).  
15 Exclusion mapping was also performed with this software package, and a locus 8s > 2 was considered excluded at a LOD score of -2.

To establish appropriate thresholds for suggestive and significant genome-wide linkage for these particular datasets, simulations were performed by generating artificial genotype data with the identical family structures. These simulations matched the  
20 datasets with respect to marker density, marker informativeness, the individuals genotyped, affected status, and the fraction of missing data.

To assess the significance of the TDT results for each marker, permutation tests using the same genotype data were carried out. For each trio, chromosomes were randomly reassigned as transmitted or untransmitted to form a permuted dataset. The  
25 number of permuted datasets with values as significant as that seen for the best single-marker and two-marker tests were tabulated. In order to quantify the extent of LD in the *IBD5* region, 3-marker haplotypes were examined using the TDT and  $P_{\text{excess}}$   
(d).  $P_{\text{excess}}$  represents the strength of LD and is calculated by  $(p_{\text{affected}} - p_{\text{normal}}) / (1$

-  $p_{\text{normal}}$ ). In our study, the  $P_{\text{affected}}$  is calculated from the frequency of the haplotype among the transmitted parental chromosomes and  $P_{\text{normal}}$  is the frequency among untransmitted parental chromosomes.



(This page has been intentionally left blank.)

Handwritten text in the left margin, oriented vertically.

Table 1. Summary of the first stage of LD mapping using microsatellite markers.

	Marker #	Marker Name	Source of marker <sub>1</sub>	Estimated Genetic Position <sup>2</sup>	Distance to next marker	Previous linkage results (MLOD) <sup>3</sup>		TDT results <sup>4</sup>	
							Allele	X <sup>2</sup>	pvalue
5	1	D5S1435	G	128.50	0.50	0.76	115	5.84	0.016
	2	AFMa113ye9	G	129.00	0.83		-	-	-
	3	D5S1505	M	129.83	0.00	0.79	-	-	-
	4	D5S1384	U	129.83	0.00		-	-	-
	5	D5S471	G	129.83	0.57	0.79	238	7.58	0.0059
10	6	D5S632	G	130.40	0.20		114	4.59	0.032
	7	D5S818	M	130.60	0.20		-	-	-
	8	D5S2502	M	130.80	0.10		-	-	-
	9	AFMB352XH5	G	130.90	0.04		-	-	-
	10	D5S1975	G	130.94	0.00		-	-	-
15	11	D5S622	G	130.94	1.86		-	-	-
	12	D5S2059	G	132.80	0.85		190	5.83	0.016
	13	D5S615	U	133.65	0.00	1.8	-	-	-
	14	D5S804	M	133.65	0.00	1.8	-	-	-
	15	D5S1495	M	133.65	0.00	1.8	382	4.00	0.045
20	16	GATA68A03	M	133.65	0.35	2.2	-	-	-
	17	D5S809	M	134.00	0.40	2.1	-	-	-
	18	D5S2120	G	134.40	0.20		-	-	-
	19	D5S642	G	134.60	0.65	2.6	-	-	-
	20	D5S2057	G	135.25	0.00	3.1	-	-	-
25	21	D5S2110	G	135.25	0.62	3.1	-	-	-
	22	IRF1p1	S	135.87	0.19		156	13.27	0.00027
	23	D5S1984	G	136.06	0.16		222	14.04	0.00018
	24	CSF2p10	S	136.22	0.58		307	4.00	0.045
	25	D5S2497	G	136.80	0.10	3.9	129	7.69	0.0055
30	26	w2429/240wa7	G	136.90	0.10		-	-	-
	27	w866/057vg5	G	137.00	0.10		-	-	-
	28	D5S1766	U	137.10	0.10	3.5	245	6.48	0.011
	29	D5S808	M	137.20	0.10	3.3	-	-	-
	30	D5S458	G	137.30	0.00	3.1	-	-	-
35	31	D5S396	G	137.30	0.09		-	-	-
	32	D5S2053	G	137.39	0.56	3.0	-	-	-
	33	D5S1995	G	137.95	0.69	2.8	-	-	-
	34	D5S2115	G	138.64	0.68	2.4	-	-	-
	35	IL9	M	139.32	0.01	2.0	-	-	-
40	36	D5S816	M	139.33	0.07	2.0	-	-	-
	37	D5S393	G	139.40	0.10	2.0	-	-	-
	38	D5S399	G	139.50	0.90	2.0	127	4.57	0.032
	39	D5S479	G	140.40	0.10		-	-	-
	40	AFM350yb1	G	140.50	0.10		-	-	-
45	41	D5S1983	G	140.60	0.12		116	4.55	0.033
	42	D5S476	G	140.72	0.00	1.7	-	-	-
	43	D5S500	G	140.72	0.28	1.7	211	4.15	0.042
	44	AFMB290YC9	G	141.00	0.82		-	-	-
	45	D5S414	G	141.82	0.98		-	-	-

5

10

46	D5S2009	G	142.80	0.12		140	6.70	0.01
47	D5S658	G	142.92	0.00	2.0	-	-	-
48	D5S2116	G	142.92	1.08		-	-	-
49	D5S2011	G	144.00	0.06		-	-	-
50	D5S2119	G	144.06	0.00		-	-	-
51	D5S1979	G	144.06	1.15		-	-	-
52	D5S2017	G	145.21	2.19	2.2	91	5.40	0.02
53	D5S2859	M	147.40	0.09		-	-	-
54	D5S436	G	147.49	0.00	1.6	-	-	-
55	D5S207	M	147.49	0.00		-	-	-
56	D5S1480	M	147.49		1.6	-	-	-

- 15
- <sup>1</sup> Abbreviations: G, Genethon; M, Marshfield; U, Utah; S, designed by authors from genomic sequence.

<sup>2</sup> Estimated from genetic (Genethon, Marshfield) and physical (data not shown) map information

<sup>3</sup> Linkage data for the CD subgroup with early onset disease as seen in figure 1 and reference ###

<sup>4</sup> Results are shown only if pvalue < 0.05

Table 2. Summary of combined LD mapping information.

20

25

Marker #	Marker Name	Distance to next marker (kb)	LD mapping stage	Allele	T:U	TDT results X <sup>2</sup>	pvalue
57	CAh14b	43	2	-		-	-
58	ATTh14c	167	2	-		-	-
59	IL4m2	164	2	214	1.8	4.74	0.029
60	GAh18a	21	2	193	1.4		0.018
22	IRF1p1	24	1	156	1.7	13.27	0.00027
61	CAh15a	130	2	373	1.5	7.73	0.0054
62	CAh17a	97	2	140	1.8	16.19	0.00005
23	D5S1984	163	1	222	1.8	14.04	0.00018
24	CSF2p10	178	1	307	1.4	4.00	0.045
63	CAh81b	85	2	-		-	-
64	CAh81c		2	-		-	-

	<b>Legend:</b>	<b>EST:</b>	expressed sequence tag						
		<b>gene:</b>	known gene						
	<b>Predicted gene:</b> gene predicted from genomic sequence using the GENSCAN package								
		<b>ins/del:</b>	insertion/deletion						
	<b>genomic:</b> derived from resequencing of entire genomic region (therefore includes genes, promoters, enhancers, etc.)								
	<b>Notes:</b>	1) "N" in sequence represents polymorphic base 2) details are provided where currently available 3) This list includes all polymohisms: SNPs, repeats, and insertions/deletions							
	<b>Polymorphism</b>	<b>Poly</b>	<b>comment #1</b>	<b>comment #2</b>	<b>comment #3</b>	<b>comment #4</b>	<b>Gene Name</b>	<b>Flanking Sequence</b>	
	<b>Name</b>	<b>type</b>	<b>Polymorphis m details</b>	<b>Verification</b>		<b>Position on reference genomic sequence (attached)</b>			
				<b>Status</b>					
1	CSF2_6610	c/t		Verified	gene	n/a	colony stimulating factor 2	aaacttcctgtgcaacccagaaNtatcacctttgaaa gtttcaaaag	
2	CSFenh_1492	g/t		Verified	gene	n/a	colony stimulating factor 2 (enhancer	atttctcccttgtgataatgtctctcgNataagga tcctggagtgactcaagc	
3	CSFenh_1580	g/t		Verified	gene	n/a	colony stimulating factor 2 (enhancer	acacgcataggaaaactctctccagagggttttcNc ctgtctctgtaggaagggggcccccagaggg	
4	CSFex4_6632	c/t		Verified	gene	n/a	colony stimulating factor 2	aaaggaacttcctgtgcaacccagaaNtatcacct ttgaaagtttcaaaagaga	
5	E4ex1_1	t/c		Verified	EST	n/a	n/a	ctgggaacccaaacatcctggagaaaNagctgag aaactaccaagga	
6	E4ex1_2	a/g		Verified	EST	n/a	n/a	agacagaaaattagcttagagatggagggtggca Ngatctctaaagcigtctccgcctgcc	
7	E4ex1_3	t/c		Verified	EST	n/a	n/a	atgggagggtggcac- gatctctaaagctgtccNgtgccaattcaggagtgcc ctcatgcataag	
8	Facoex16_1	g/c		Verified	gene	n/a	Fatty acid CoA ligase	ggctacttgaaaagatccacagaggaNgaaggag gccttcacacacgcattcgc	

9	FaCoex1_1	t/c	Verified	gene	n/a	Fatty acid CoA ligase	accaggaggacctgtctaccacactgctaaNggctct accaccaccggcttctc
10	GENS010ex2_1	t/c	Verified	Predicted gene	n/a		agaagcagtagggcNactactaggtagcccca
11	GENS020ex1_1	a/g	Verified	Predicted gene	n/a		gggtgtgacagaggctgtNtggcaggactc
12	GENS020ex3_1	a/c	Verified	Predicted gene	n/a		ggcgccacNcaaaactctgcgcagtcc
13	GENS020ex3_2	t/g	Verified	Predicted gene	n/a		aggccagccctNttcctactatgtctct
14	GENS020ex3_3	a/g	Verified	Predicted gene	n/a		tagaagcagaaggtgtgtggcctcNctgggtgtg ggacttctgccccacitgcac
15	GENS021ex1_1	g/c	Verified	Predicted gene	n/a		tcatggcgggtgtctgtgacctgagagaggNtca gatggaagaagccctgggtgaggaatgag
16	GENS021ex1_2	t/c	Verified	Predicted gene	n/a		aaggccctcatgtattcatgattaNtgggtgtgttg tccatgtcct
17	GENS025ex1_1	a/g	Verified	Predicted gene	n/a		gctccaagccctggggagggaagtggtgtg acccac
18	GENS026ex12_1	a/t	Verified	Predicted gene	n/a		ctttcatgtagaagagctagtagtactgtattNtata atgcttaccatgtccatatgaacaagcttc
19	GENS026ex3_1	t/c	Verified	Predicted gene	n/a		tccttcacacaaaccttaagtaaccNagagagca ataggactcctgttaaa
20	GENS026ex4_1	t/c	Verified	Predicted gene	n/a		gggtttgtgtatctataaaataggNgaccicagcctta aaacctcatct
21	GENS026ex5_1	t/c	Verified	Predicted gene	n/a		tggaaaaatacaattacccccgtattacNtgggtgga gaaatgaaggcatt
22	GENS026ex5_2	a/g	Verified	Predicted gene	n/a		cagtaaatatytaggccctatgtc
23	GENS026ex6_1	t/g	Verified	Predicted gene	n/a		aatttatttttgccttttaataaagtaNctcti- ctgctcatttggattctgctatctcgta
24	GENS026ex6_2	t/c	Verified	Predicted gene	n/a		ttatttttgccttttaataaagta- ctctNctgctcatttggattctgctatctcgta
25	GENS027ex2_1	a/g	Verified	Predicted gene	n/a		gcaatgcgtgtttttcttttagtatatacaaaNtgaatcctt ctttccctcaaaagcttga
26	GENS027pro_1	a/c	Verified	Predicted gene	n/a		ccccaccatctctcgttggcggaagggaNaatg gtatctttaatacccaaaaagataat



27	GENS027pro_2	t/c		Verified	Predicted gene	n/a	alctttgaggcttatagaaccacacatataggtNgaaaa cattgttgccctctggcacaga
28	GENS02ex2_1	a/g		Verified	Predicted gene	n/a	ccatctatgtaggtaacNgaggcaaaagcaaggg ctagggaga
29	GENS02ex3_1	g/c		Verified	Predicted gene	n/a	gggaggcagacattaggcaataatNacatggat ctctgaaaaacatagctctctacga
30	GENS02ex4_1	t/g		Verified	Predicted gene	n/a	agaggaaatgggtggagtggcagNggggctgggt tctcggctctccccga
31	GENS030ex2_1	a/g		Verified	Predicted gene	n/a	ctggctaggccaaagaactggccaNgltacagtt cccacagagtaccgg
32	GENS030ex3_1	a/t		Verified	Predicted gene	n/a	agggtagtgagggtgtactagggaNcicggacact gagccctgaagtgggg
33	GENS030ex4_1	a/g		Verified	Predicted gene	n/a	gcggctgcagggggaggcacaagcNtggggcca ggcgccaagcggc
34	GENS030pro_1	t/c		Verified	Predicted gene	n/a	atgtgtaccatggccaactaatgtttga
35	GENS031ex1_1	t/c		Verified	Predicted gene	n/a	ctgggtaaaaacaggcgcctggacaaaagcNgg aaacagaatgaggtccaggcgttgatt
36	GENS031pro_1	a/t		Verified	Predicted gene	n/a	ccacattttctaataccagctctatcatgNtggacattt gggtgtgtccaagtcttgc
37	GENS036ex1_1	t/g		Verified	Predicted gene	n/a	tccttcacaggacaggaaatcgcacaaaNaaacat ttcattagcttgcatgtggaagcat
38	GENS036ex1_2	t/c		Verified	Predicted gene	n/a	aaatggttactgtataccattaccctatctgctttNggg gtgggtggcgcggggggga
39	GENS037ex1_1	a/g		Verified	Predicted gene	n/a	aatagggtgcgatttgagtgacaatgtgagNcaat tagttatcaggagagaagcctaagcatg
40	GENS037pro_1	a/c		Verified	Predicted gene	n/a	tgaactttagctctcttggtaaataggaaatNgctc caactactgtccaccacaagaaac
41	GENS038ex3_1	a/c		Verified	Predicted gene	n/a	tatctgcgcgcctccctccacagctgtcagNcttc atctaattggaaaaagccagatgctcg
42	GENS038pro_1	t/c		Verified	Predicted gene	n/a	tccctccctctgttctgcccgcgctctctgNcatctt atctatggggaggagattctccaacct
43	GENS039ex4_1	a/g		Verified	Predicted gene	n/a	ctcttgcataacataatttaataataacNaggaaa aacaataaatactcgtgtggctga
44	GENS039ex7_1	a/g		Verified	Predicted gene	n/a	atgtcgcttttctgctctctccctcNttttcctagaagt cctccagaaacc

45	GENS039ex7_2	t/g		Verified	Predicted gene	n/a	ctggagtcgcgtactctggtggtggtgacccNctac ggcctgttcttaactctgta
46	GENS03ex2_1	a/g		Verified	Predicted gene	n/a	ataatgcagaacaaattagagaaaaactccNgtc aggctctccactcaccatggctgtgtggt
47	GENS03ex6_1	a/g		Verified	Predicted gene	n/a	aaacaaacaatgccggcagagtcaccNgggct ggccattgaaaagagatcatcag
48	GENS03ex6_2	a/t		Verified	Predicted gene	n/a	gggaggctctggaacccagagagaccNgtag gagggactgccggcaggagctgtg
49	GENS043ex1_1	a/g		Verified	Predicted gene	n/a	gcgcactctccatcttccatgaacttgagcNtga gcaatgaactgagtgatcagtcctcat
50	GENS043ex2_1	a/c		Verified	Predicted gene	n/a	tacttatctcaatcgcagttggtgaaaaaNtctg caaatagctagccctccagttcaa
51	GENS044ex1_1	t/c		Verified	Predicted gene	n/a	cagtagtctaggaaagagatgtggtattactgcNt ctgtcaatgataaagcagtaagtatcog
52	GENS044ex2_1	t/c		Verified	Predicted gene	n/a	tgtgtaaaacattcaaaatccctctctcNagctat caagtattttgttaattg
53	GENS044ex2_2	t/g		Verified	Predicted gene	n/a	ctaaactgggtcatattctctcatcagccNcattct gctaagccagatgccctgggaag
54	GENS044ex2_3	a/c		Verified	Predicted gene	n/a	tctgctaagccagatgccctgggaagNtctcact gccatctggaaggatgcaga
55	GENS044ex2_4	t/c		Verified	Predicted gene	n/a	ccctgggaagatctctcagtcgcacNtgggaaggatg cagaatgtgtgat
56	GENS044ex3_1	a/g		Verified	Predicted gene	n/a	cgtctccatcttccctataaccatgtctgaNcccttga gccataacatggatggacagc
57	GENS045ex10_1	g/c		Verified	Predicted gene	n/a	aagctacacaagatgggcatttggccctttNaccaa catgctgttcttgact
58	GENS045ex10_2	t/c		Verified	Predicted gene	n/a	cagcaaaaccccatgcaaacattcagcatttcaNg gctgaggccacacacagaagccatcag
59	GENS045ex10_3	a/g		Verified	Predicted gene	n/a	aaaccccatgcaaacattcagcatttcaNgtga ggccacacacagaagcc
60	GENS045ex10_4	g/c		Verified	Predicted gene	n/a	ggtagcccaagatgttctgtgtggtaccaacNga gaaaagccatcttttaaacagc
61	GENS045ex10_5	t/c		Verified	Predicted gene	n/a	gccatcttttaaacagcagaaatctcactgtcNc ctgtccactctctccctgtcaatccccaggac
62	GENS07ex1_1	t/c		Verified	Predicted gene	n/a	ccatctgagacacctatcagccacgaccttacttcca Nataccatcagcattctgtgtacaac

GenBank accession numbers are given in the left column and the corresponding gene names are given in the right column.

63	GENS09ex5_1	t/g		Verified	Predicted gene	n/a	ggggcttgcgcagcactgggccNgggacgcaga cccaa
64	GENS09ex5_2	a/g		Verified	Predicted gene	n/a	cagcactgggcccgggagcgcagaccacaaNacg acagcaggcagcgccgagcg
65	GENS09pro_1	t/c		Verified	Predicted gene	n/a	tgaaggggcccgcacatggcaatgaatcta
66	IGR1000a_1	a/g		Verified	genomic	513	ccaggttggttttNgaactcctggctt
67	IGR1002a_1	g/c		Verified	genomic	418	actctggggccgNgtgtggtggt
68	IGR1002a_2	t/c		Verified	genomic	422	gctgggcccgggtgNgtgggtcacccc
69	IGR1002a_3	g/c		Not yet verified	genomic	477	aggcagggtgatcacNaggtcaagga
70	IGR1002a_4	other/w +	Poly t	Verified	genomic	259	gtaaaatttaNttttttt
71	IGR1002a_5	a/t		Verified	genomic	405	ftagaaaaacNactgtgggccc
72	IGR1003b_1	a/c		Verified	genomic	210	ctcagaaaaacaaaacaNaacaaaaaagaac
73	IGR1003b_2	other/w +	Poly t	Verified	genomic	1	taaaaatttaNttttttttt
74	IGR1004a_2	other/w +	Poly a	Verified	genomic	395	aaaaNaacaacacttagag
75	IGR1006a_1	t/g		Verified	genomic	389	aactcctgacctaaNgtgatccgctgtt
76	IGR1006a_2	ins/del		Verified	genomic	169	gtttttttNtttgagacagaa
77	IGR1007a_1	t/c		Verified	genomic	190	tttccttaccatNctgtccctatat
78	IGR1007a_2	t/c		Verified	genomic	196	ccatcctgtcNicatatacaaaact
79	IGR1008a_1	other/w +	Poly t	Verified	genomic	605	tgtgtgtctctacNttttttt
80	IGR1008a_2	t/c		Verified	genomic	385	tattttgcctcNgtggattctct
81	IGR1009a_1	t/c		Verified	genomic	373	gtgctgggattaNaggtggaaccac
82	IGR1009a_2	t/c		Verified	genomic	389	agggtgaaccactgNtccagccacttc
83	IGR1010a_1	other/w +	ca repeat	Verified	genomic	186	ttcattatgcacatNacacacacac
84	IGR1011a_1	g/c		Verified	genomic	207	ttccatccactgNacagtgtattt
85	IGR1012a_1	t/g		Verified	genomic	520	ggaattctgcaaaaNaacatttcatta
86	IGR1012a_2	t/c		Verified	genomic	556	ggtaagcattgtcNtgcctgctgt
87	IGR1013a_1	t/c		Verified	genomic	247	accattacctatctgttNgggggtgggtggcgcg
88	IGR1015a_1	a/c	a in ref. sequence	Verified	genomic	202	tcctccttgagtgctctcaNcgggtctctgggttac

89	IGR1016a_1	a/g		Verified	genomic	300	cacgccaccatcNtctagcctggttt
90	IGR1016a_2	ins/del		Verified	genomic	420	atctgtctcNatgctttcccc
91	IGR1016a_3	t/g		Verified	genomic	103	ccctacaaccNatctgtcag
92	IGR1017a_1	t/c		Verified	genomic	537	aaggggtgctgcagctccNaaggaggttttagaa
93	IGR1019a_1	t/c		Verified	genomic	366	gagcagcacatggNccaagtggaggagctaag
94	IGR1020a_1	t/c		Verified	genomic	590	tcccaccagccagaggttaactaNtctgttaataatt
95	IGR1021a_1	t/g		Verified	genomic	237	gggtgtattagagacaNgggattgagagctgc
96	IGR1021a_2	g/c		Verified	genomic	314	gcagatttttgNttctgtaaat
97	IGR1021a_3	t/c		Verified	genomic	411	agttcataatttttaaNgtttttcagg
98	IGR1021a_4	ins/del	2 bp deletion	Verified	genomic	187	ctcttttactctNtacctataccat
99	IGR1022a_1	g/c		Verified	genomic	402	aaccctctaagataatttttNaaaggactttctaaag gaa
100	IGR1022a_2	g/c		Verified	genomic	522	gtcaaggccctaactgttttaNttgctctgttatcgca
101	IGR1022a_3	t/c		Verified	genomic	608	tctagctctggctgNtgagtgctgctgccag
102	IGR1023a_1	a/c		Verified	genomic	477	tttgtaaataggaatNgtctcaactactctgctc
103	IGR1025a_1	other/w +	ca repeat	Verified	genomic	557	ggagattttataNacacaca
104	IGR1026a_2	other/w +	Poly a	Verified	genomic	429	ccctatctcaNaaaaa
105	IGR1026a_3	ins/del		Verified	genomic	520	atgaaatgagatagtcagctaaaaNgccccgaag ag
106	IGR1027a_1	a/g		Verified	genomic	480	agagcaagctNaggagctc
107	IGR1027a_2	g/c	g on ref. sequence	Verified	genomic	497	gctctggacggcNagccccggaacc
108	IGR1029a_1	a/g		Verified	genomic	497	acaatgtgagNcaattagttt
109	IGR1030a_1	a/g		Verified	genomic	554	agcaciggggNacaatgtt
110	IGR1031a_1	other/w +	Poly t	Verified	genomic	200	tcaggaatgacNttttttt
111	IGR1031a_3	a/c		Not yet verified	genomic	565	aagagctacNgtcttaccaa
112	IGR1032a_1	t/c		Verified	genomic	175	ccctaccccNagcagtgaa
113	IGR1032a_2	other/w +	Poly t	Verified	genomic	352	taatgaatttcNttttt
114	IGR1034a_1	a/g		Verified	genomic	293	tgcaatggcNcagctcagct
115	IGR1039a_1	t/g		Verified	genomic	462	ccttggggcacNctactcagcct

116	IGR1040a_1	t/c		Verified	genomic	188	ctggccagaNggggccctcccc
117	IGR1040a_2	t/g		Verified	genomic	356	aggattccaNgcaggaaagt
118	IGR1040a_3	a/c		Verified	genomic	633	agctgtcagNcttcattcaatt
119	IGR1043a_1	a/g	g in ref. sequence	Verified	genomic	170	ggatctgcacNggaaggaatt
120	IGR1043a_2	a/g		Verified	genomic	377	glactttgttNatttaataat
121	IGR1045a_2	t/c		Verified	genomic	200	ttgacaaaaNtggccatga
122	IGR1045a_3	a/t		Verified	genomic	291	tagaagatttNaaaattgtaa
123	IGR1045a_4	t/c		Verified	genomic	99	cacagctcaNatccaagccaccccaa
124	IGR1046a_1	t/g		Verified	genomic	301	gtgcatggNtgtcccctcccc
125	IGR1046a_2	t/c		Verified	genomic	337	tctctgttcNcatcttattc
126	IGR1046a_3	t/c		Verified	genomic	572	tccatactNgttgaatg
127	IGR1047a_1	ins/del		Verified	genomic	253	agagcacaNacacatgga
128	IGR1050a_1	a/g		Verified	genomic	235	ctagatgaagggcatalNgcagaagacattt
129	IGR1050a_2	a/t		Verified	genomic	558	gggctggggttcccgNggtgccaagggg
130	IGR1052a_1	t/c		Verified	genomic	319	cctccgtaaatatcttNcagccttaaacctt
131	IGR1055a_1	a/g		Verified	genomic	566	atttaaatacNaggaaaaacaat
132	IGR1056a_2	t/g		Verified	genomic	235	tattaccagggactcctggNgtccactgctttag
133	IGR1056a_3	t/c	this base is missing on ref. seq.	Verified	genomic	285	aacccttggctccaagtgcNagcagccacagctttc
134	IGR1057a_1	t/c	this base is missing on ref. seq.	Verified	genomic	271	ttcgaagtttcagtgaacNgtccctcgcgaaaa
135	IGR1057a_2	a/g		Verified	genomic	390	gacaaagaggtcagcacNtgagtagaacgc
136	IGR1060a_1	g/c		Verified	genomic	279	aaggagcggactctactctaaNgaatcctcctgtaag
137	IGR1060a_2	t/g		Verified	genomic	306	tgtaaagggcggggccctatNatggctctggggagaat
138	IGR1063a_2	a/g		Verified	genomic	425	tcctgtcttccctcNttttcclagaaagtcctcc
139	IGR1064a_1	t/g		Verified	genomic	335	tggccgtgtgaccccNctacggggcctgtttccta
140	IGR1066b_1	a/g		Verified	genomic	90	taccaaagggccgcgtccNggcacttgggcgatgt
141	IGR1068a_1	other/w +	poly T	Verified	genomic	141	ttcttaggtgttgNttttttttttt
142	IGR1070a_2	t/c		Verified	genomic	614	ttccattgttticaNtggaaatttatattttaatgt
143	IGR1070a_2	t/c		Verified	genomic	614	ttccattgttticaNtggaaatttatattttaatgt

144	IGR1070a_3	t/g		Verified	genomic	308	tctaactgtNtctaaactg
145	IGR1071b_1	t/c		Not yet verified	genomic	115	ttattccattgttttcaNttggaatttatatttta
146	IGR1072a_1	t/c		Verified	genomic	337	ctgacataattttatttaNttattagtttttttga
147	IGR1092a_1	a/c		Verified	genomic	241	aagcagagccaNacatacatctcac
148	IGR1095a_1	a/g		Verified	genomic	148	agaaaggagacNtctggagccagg
149	IGR1095a_2	g/c		Verified	genomic	213	ttttctcgcacNcatagtccttatgca
150	IGR1098a_1	a/c		Verified	genomic	237	gcaagccagaNgacagggccacag
151	IGR1098a_2	g/c		Verified	genomic	294	ccgtcttgaaNcaaaactgctgic
152	IGR1099a_1	other/w +	Poly t	Verified	genomic	216	atgcatggcatgttcNttt
153	IGR1099b_2	a/g		Not yet verified	genomic	406	tagagacNgagttcacc
154	IGR1099b_3	a/g		Not yet verified	genomic	270	ciggagtNcaatggcacg
155	IGR1100a_1	ins/del	deletion of 1 g t on ref.	Verified	genomic	602	atgaaaacttaacggNtctcagctctgttcta
156	IGR1100a_2	a/t	sequence	Verified	genomic	103	tgatttagaatttttattNaaaaaagicaa
157	IGR1102a_1	t/c		Verified	genomic	605	ttttcttatNgcattttggct
158	IGR1102a_2	t/c		Verified	genomic	400	aattagccaggNggtggagcgcgca
159	IGR1102a_4	a/g		Not yet verified	genomic	119	ctgacattaccagNggaaaaacaatggctg
160	IGR1102a_6	other/w +	Poly a	Verified	genomic	549	cgagactccatctggNaaa
161	IGR1103a_1	other/w +	Poly a	Verified	genomic	78	aaaNgagtttctctg
162	IGR1104a_1	g/c	g on ref. sequence	Verified	genomic	526	cagcttctatgttgNttttattcctcag
163	IGR1105a_1	a/g	g in ref. sequence	Verified	genomic	383	ttaggttcttgggaagcNggtttatgaactaat
164	IGR1107a_1	a/c	a in ref. sequence	Verified	genomic	402	aagattcaatgNaatcagtgactgt
165	IGR1109a_1	a/g	a in ref. sequence	Verified	genomic	415	ggtagatgtgNlattacaagatg
166	IGR1110a_2	ins/del		Verified	genomic	195	aaaaaaNttattaccg

bioRxiv preprint doi: <https://doi.org/10.1101/2025.10.25.1025002>; this version posted October 25, 2025. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

167	IGR1111a_1	other/w +	Poly a	Verified	genomic	481		gagctagactctgtctcNaaa
168	IGR1111a_2	a/g	g in ref. sequence	Verified	genomic	318		tctactaaaNatacaaaaa
169	IGR1111a_3	a/g	g in ref. sequence	Verified	genomic	325		atacaaNaattagcc
170	IGR1112a_1	t/c	c on ref. sequence	Verified	genomic	183		aaatacaaatagaNaacatacaaaa
171	IGR1113b_2	a/c		Not yet verified	genomic	293		tacctgaNgtgtgtctg
172	IGR1114a_1	t/c	c on ref. sequence	Verified	genomic	254		gtggctcacacNtgcattcccagcac
173	IGR1114a_2	a/g	a in ref. sequence	Verified	genomic	312		cccaggaagtcNaggctgcagtg
174	IGR1115a_1	other/w +	Poly a	Verified	genomic	465		gagccagactctgtcttNaaaaa
175	IGR1115a_2	a/c		Verified	genomic	307		ctctatctactataaNatacaaaaattag
176	IGR1115a_3	t/c		Verified	genomic	322		atacaaaaattagcNgggtgggtggg
177	IGR1115a_4	g/c		Not yet verified	genomic	438		gaatgaactccagcNtgggtgacagagcc
178	IGR1116a_1	t/c		Verified	genomic	625		gactctaagggtgagcNctgaataaagccct
179	IGR1118a_1	a/g		Verified	genomic	192		gtatatgtattagtatNgggtaatacatctccaaatg
180	IGR1118a_2	other/w +	Poly a	Verified	genomic	47		ggcaaaaaagagcgaaactctgctcaaaaaaN
181	IGR1118a_3	t/c		Verified	genomic	619		agcciggccttcttctctaaNaagccctaaattgctag
182	IGR1119a_1	a/g		Verified	genomic	190		aa
183	IGR1120a_1	ins/del		Verified	genomic	258		ccaagctccctcatagNtccctattctgctcag
184	IGR1126a_1	other/w +	Poly a	Verified	genomic	196		ttttctttttttNctgagacagttttttc
185	IGR1142a_1	ins/del	deletion of 2 bp	Verified	genomic	526		agagactccgtctcNaaaaa
186	IGR1142a_2	t/c		Verified	genomic	321		ttttcgcagtaatacNtataaaaaatttagattc
187	IGR1144a_1	t/c		Verified	genomic	435		cagaacccctcatagcatgNgatcacctgataaag
188	IGR1144a_2	a/g		Verified	genomic	611		caicaacaagggttcttaNagaattctctaagg
189	IGR1145a_1	a/g		Verified	genomic	338		aaatgagaaaaatcttaNaatgaatctcgt
				Verified	genomic			tatcacttctcagtNataaagtctctaa

190	IGR1145a_2	g/c		Verified	genomic	463	aacaggatattaataatcttcacattNcagtaataaa gac
191	IGR1148a_1	other/w +	poly T	Verified	genomic	304	ttttagagNttttt
192	IGR1157b_1	t/c		Not yet verified	genomic	301	aagtgcggNatatacac
193	IGR1161a_1	t/c		Verified	genomic	221	cagtctatatctcaaaNgagcaaacagaca
194	IGR1161a_2	t/c		Verified	genomic	662	aaactattttactlaaaNagaagtcccatla
195	IGR1169a_1	other/w +	Poly a	Verified	genomic	384	aaactctatctNaaaaaataaaa
196	IGR1169a_2	a/c		Verified	genomic	454	tgtgtgcaNaglaagagaa
197	IGR1172a_1	t/c		Not yet verified	genomic	587	cclaacattaNttcaaaaataa
198	IGR1173a_1	a/t		Not yet verified	genomic	517	agtttttNaaattttt
199	IGR1185a_1	t/c		Verified	genomic	516	aaaaattaNaaaaattagc
200	IGR1185a_2	t/c		Verified	genomic	576	aggctgaggNatgggaatc
201	IGR1186a_1	a/t		Verified	genomic	210	aacaagcttNtcttaaac
202	IGR1186a_2	ins/del		Verified	genomic	423	ttttttNagctctgattc
203	IGR1193a_1	a/g		Verified	genomic	343	atgctagcNatgtaaaaaa
204	IGR1196a_1	t/c		Not yet verified	genomic	109	aaaaaaacaNaaggcact
205	IGR1196a_2	a/g		Not yet verified	genomic	202	gaagggtcaNacaggaaag
206	IGR1196a_4	t/c		Verified	genomic	457	ggagcaaaaaNaaatgttta
207	IGR1199a_1	a/g		Verified	genomic	201	atatattccNagaaatgcat
208	IGR1199a_2	t/g		Verified	genomic	214	aaatgcatcaNtaggcaattt
209	IGR1200a_1	other/w +	Poly a	Verified	genomic	516	gacgaccttttNaaaaaataaa
210	IGR1218a_1	t/c		Verified	genomic	469	ttttaataacNgtaaaaatgcc
211	IGR1218a_2	a/g		Verified	genomic	590	gcgcgcggNigagaggt
212	IGR1219a_1	t/c		Verified	genomic	129	gcttttlaaaNtttttct
213	IGR1219a_2	t/c		Verified	genomic	195	ctacaaagtNtattaaggg
214	IGR1219a_3	a/t		Not yet verified	genomic	251	ttttgcttcaNagcccttcctt
215	IGR1258a_1	other/w +	gt repeat	Verified	genomic	177	taaacatataataNgtgtgtgt



216	IGR1258a_2	t/c		Verified	genomic	436	tcicgggagtaNlggcacaca
217	IGR1279a_1	g/c		Verified	genomic	223	accagtaattattttaaaaaatNaaagtactaattgttt
218	IGR1279a_2	t/g		Verified	genomic	569	agccgggcggtggggcagNtgcctgtaatcccag
219	IGR1286a_1	g/c		Verified	genomic	365	ctgtttgagaNagtcactct
220	IGR1319a_1	a/c		Not yet verified	genomic	200	taatttaaggctctgNtcccctgctcttttc
221	IGR1350a_1	t/c		Verified	genomic	125	actctctcNtccccaggg
222	IGR1353a_1	g/c		Verified	genomic	643	ctccaaggaNctctgtctcc
223	IGR1353a_2	t/c		Verified	genomic	438	tggatggaNggaagaac
224	IGR1356a_1	ins/w+		Verified	genomic	172	taggggaggNcaatccag
225	IGR1362a_1	t/c		Verified	genomic	434	caaggggaagNgcattccag
226	IGR1363a_1	a/g	G in ref sequence	Verified	genomic	382	gcagtgggNcaagtgtgg
227	IGR1364a_1	del/w+		Verified	genomic	147	gtttgttNgtttttgag
228	IGR1365a_1	t/c		Verified	genomic	160	actgggatgNtcttaactg
229	IGR1365a_2	ins/w+		Verified	genomic	211	gacttttNaatagagat
230	IGR1366a_1	a/g		Verified	genomic	371	caagacagtgNataaatagc
231	IGR1367a_1	a/g		Verified	genomic	73	aaagaaaaNtcagaattt
232	IGR1367a_2	del/w+		Not yet verified	genomic	425	ccctctccccNcttctctc
233	IGR1369a_1	a/c		Verified	genomic	44	tcaaaagagaNcaatgatga
234	IGR1369a_2	a/c		Verified	genomic	91	aaagtactaNtatgaaaaat
235	IGR1370a_2	del/w+		Not yet verified	genomic	350	tatatataNacacacatac
236	IGR1370a_3	t/g		Verified	genomic	241	gaagaaaaNagtgcagtg
237	IGR1371a_1	t/c		Verified	genomic	72	aaaatatgcNtcaggagtga
238	IGR1371a_2	a/g		Verified	genomic	231	aaaaaaagNccaacagaaaa
239	IGR1372a_1	other/w +	poly t	Verified	genomic	298	tttttttNaggagagt
240	IGR1372a_2	t/c		Verified	genomic	323	tctgtgtctcNggctggagt
241	IGR1373a_1	t/c		Verified	genomic	338	aactagaaNtctccagg
242	IGR1375a_1	t/c		Verified	genomic	96	aggaattgaaNttaataga
243	IGR1376a_1	a/t	A in ref sequence	Verified	genomic	462	cacttgtNtgattaat
244	IGR1376a_2	del/w+		Verified	genomic	79	gcaagaagcNcaacaacc

245	IGR1380a_1	other/w +	poly t	Verified	genomic	573	agtcaccaacNttttt
246	IGR1380a_2	a/g		Verified	genomic	155	ttaatatgatNaaaigctcaa
247	IGR2001b_1	a/c		Verified	genomic	148	ccccacaaagNccgagaagcct
248	IGR2002a_1	a/c		Verified	genomic	357	aaaatcgagatgaaggNtttgagcatttcagaga
249	IGR2003a_1	a/g		Verified	genomic	234	tgcagtgagccNagatcacgtcact
250	IGR2004a_1	ins/del	deletion of 14 bp	Verified	genomic	576	tagagttgttcccNagagtttgttccca
251	IGR2006a_1	t/c		Verified	genomic	122	cttagtttcatttNcctactgcca
252	IGR2006a_2	a/g		Verified	genomic	380	ctggctccNaattaataag
253	IGR2007a_1	other/w +	Poly a	Verified	genomic	459	taaagtaagaatccctaaggttNaaaaa
254	IGR2008a_1	t/c		Verified	genomic	646	aag ttactctgcaggagctNtagggagatgaaggaag aagcc
255	IGR2008a_2	g/c		Verified	genomic	596	ccctggaggagagctgNggtgaaggaaatgac ac
256	IGR2009a_1	ins/del	deletion of "c"	Verified	genomic	270	agagtaagtaggggNccttaccaggagcat
257	IGR2010a_2	t/c		Verified	genomic	359	aggcttctgcctNcttcaactcccca
258	IGR2010a_3	a/g		Verified	genomic	233	ggtagggctactNttattttatggtt
259	IGR2010a_4	a/g		Verified	genomic	113	cctgtcacattataNaccctgcaacggcg
260	IGR2010a_6	a/g		Verified	genomic	329	agcacacggggcaNggtaggcttctgccc
261	IGR2011a_2	a/g		Verified	genomic	43	ggggatcacctcNcctgcgttcggg
262	IGR2011a_3	a/g		Verified	genomic	153	acaggctggggccNggggcgctgggc
263	IGR2011b_1	g/c		Verified	genomic	396	agacgtgcgcccagcccccgcgaaNcgagggc caccggagccgtgcc
264	IGR2011b_2	t/c		Not yet verified	genomic	500	CCACTCGGAGTCGCGCTNCGCGC
265	IGR2013a_1	g/c		Verified	genomic	431	GCCCTCACTGCAGCCCC aaaggattgaaattttgagNgaaaagtt
266	IGR2015a_1	t/g		Verified	genomic	443	cicgcagtagtccctgtgggNtagatcttactaatgic
267	IGR2016a_1	a/t		Verified	genomic	366	ggaagaagttcttacttccNtgggtgctta
268	IGR2016a_2	a/g		Verified	genomic	120	acttcatttNtcaactgtgtccc
269	IGR2017a_1	t/c		Verified	genomic	412	ggccccagcctcccNgagacaacatgcagaatt actg
270	IGR2018a_1	t/c		Verified	genomic	245	gtcagcccccattNagtaactgtctctgctg
271	IGR2020a_1	a/c		Verified	genomic	568	gagagagaaaaagatgNtcagaactccaccctggc ac

bioRxiv preprint doi: <https://doi.org/10.1101/2025.10.25.1025002>; this version posted October 25, 2025. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

272	IGR2020a_15	t/g		Verified	genomic	408	ttccccgactNgcacatccagt
273	IGR2020a_2	a/g		Verified	genomic	379	ccccagcactgtcgccNtgtgtgtcagcagcact
274	IGR2020a_3	t/c		Verified	genomic	362	ctccc
275	IGR2020a_4	a/g		Verified	genomic	301	acctgtgcttctgtNccccagcactgtcgcc
276	IGR2020a_5	a/g		Verified	genomic	210	gcagggttggtcggNggggtcgtgatgtctgcaa
277	IGR2020a_9	a/g		Verified	genomic	194	actaa
278	IGR2021a_1	ins/del		Not yet verified	genomic	233	caggtctggcaggNgacccccacaggtcagtggg
279	IGR2021a_2	a/g		Verified	genomic	147	atgactc
280	IGR2021a_3	t/g		Verified	genomic	197	actccaggtgagctgNtccaggtctggc
281	IGR2021a_4	other/w +	gt repeat	Verified	genomic	394	ggccaggggtgcatfttgNgggtgctgtctctctcct
282	IGR2021a_5	ins/del	deletion of 16 bp	Verified	genomic	277	c
283	IGR2022a_1	t/c		Verified	genomic	612	ccatagggggaggcaagcgacNgggacactag
284	IGR2022a_2	t/c		Verified	genomic	439	gaaggca
285	IGR2022a_3	t/c		Verified	genomic	190	ctgcagtacagtggggctgNtgagaggagggga
286	IGR2022a_4	a/g		Verified	genomic	248	aggg
287	IGR2024a_1	t/g		Verified	genomic	163	gtgtgNcagagagacagagagacagagagaga
288	IGR2024a_2	a/g		Verified	genomic	461	g
289	IGR2024a_3	t/g		Verified	genomic	517	gcccagcatctgagggNtaggggtgtaatacggc
290	IGR2024a_7	a/g		Verified	genomic	468	a
291	IGR2025a_1	t/c		Verified	genomic	139	aggtcaggagttNgagaccagccctgactaactg
292	IGR2025a_2	a/g		Verified	genomic	141	gtgaaa
293	IGR2025a_5	a/g		Verified	genomic	270	aatcagccttaggatacNgftaatatgatgtggcttt
							ctgtgtcacctggctgNtgcattgtgccacaagtgc
							c
							ggaaagccaccatNggaagggaaggcagg
							gccaaagggtgtgatactggctNagaggagctggc
							tca
							atggagaaaagctggggggcaggNccaggggagc
							agg
							cacattgtgaattagctacNgctgccatgcccttaag
							g
							gggcaggggccaggNgcaggggcgtaaaa
							cctgatgccaccgctcccNtaccctcatacaac
							ctgatgccaccgctccctNccctcatacaacctctt
							ttgccctccatccaNgccattccctgt

294	IGR2025a_6	a/g		Verified	genomic	377	aagctggactctctgtNggccctcaac
295	IGR2026a_1	ins/del	deletion of "c"	Verified	genomic	244	cacaaagaactaccccNttttcagctgagccc
296	IGR2026a_2	a/g		Verified	genomic	314	gtgggtcctctggggcNatgctccctcagcctc
297	IGR2026a_3	ins/del	ins/del "a"	Verified	genomic	611	tcatgtgaaacacataNgacgtgtgtaaaatgtta
298	IGR2027a_1	ins/del	ins/del "g"	Verified	genomic	166	aaagtaaatgtttataaNgggtgtggccttttttagag
299	IGR2027a_2	a/g		Verified	genomic	291	a
300	IGR2027a_3	a/c		Verified	genomic	309	gaacagggaacatgcacatNttataaaaatcctttcg
301	IGR2027a_4	t/c		Verified	genomic	386	ttataaatcctttcggNcaggcgcggtgggtcacaca
302	IGR2027a_5	other/w		Verified	genomic	386	cctg
303	IGR2029a_1	a/g	Poly a	Verified	genomic	562	tcacctgaggtcaggagttNgagaccagccctgggtg
304	IGR2029a_2	t/c		Verified	genomic	166	aaa
305	IGR2029a_3	other/w		Verified	genomic	562	actccagcccgggccaccNaaaaaa
306	IGR2030a_1	t/g		Verified	genomic	112	tgaaccgggagatgNaggttcagtgagct
307	IGR2031a_1	t/g		Verified	genomic	180	tcagcctgggtgacaagagNgagactttgtctca
308	IGR2031a_3	t/g		Verified	genomic	415	aa
309	IGR2031a_4	a/g		Verified	genomic	180	ttgtctcaaaaaaaaaaaaaatccttttg
310	IGR2031a_5	t/g		Verified	genomic	539	gaagggtgtgatatgtgcNtttcctgtctccct
311	IGR2032a_1	ins/del		Verified	genomic	40	gatgctgtgtgagtgggcaggNggactcctgctggg
312	IGR2032a_2	a/g		Verified	genomic	227	ta
313	IGR2032a_3	other/w		Verified	genomic	232	tggtgatgtgcNtttcctgtctccct
314	IGR2033a_1	t/c		Verified	genomic	126	cicagtcgccagaaaccNtatgtactgtgac
315	IGR2034a_1	t/g		Verified	genomic	356	cicagtcgccagaaaccataatgNacigtgaccccgcc
316	IGR2036a_1	g/c		Verified	genomic	278	tcact
317	IGR2036a_2	a/g		Verified	genomic	587	tcctactaaaaaNaaactaaccaggcgtgggtgg
318	IGR2037a_1	ins/del	ct repeat	Verified	genomic	441	ggaacagaggNatagacagga
319	IGR2038a_1	ins/del	aaac repeat	Verified	genomic	356	agactctgtctcNaaaaa
320	IGR2039a_1	ins/del		Verified	genomic	183	alcattctaaggaNctgacagtgcttctg
321	IGR2041a_1	a/c		Verified	genomic	534	gaagctaataNgcaaacatc
				Verified	genomic	532	acctcaaatgtgtggctggata
				Verified	genomic	394	glaagacacaNgcctgcagag
				Verified	genomic	331	aagacaacactagtctNctgttctgtcttaaa
				Verified	genomic	394	tgagttctacacagtggtNaacaacaca
				Verified	genomic	331	tgcttgccNgttgggat
				Verified	genomic	331	cacgtataaaggccaccctacNatataccaccc

322	IGR2042a_2	t/c		Verified	genomic	270		gagggccaaaggcttgcctgccNctcctgccct
323	IGR2043a_1	a/g		Not yet verified	genomic	334		tctgatagtggcNggaaacatcctgact
324	IGR2047a_1	other/w +	Poly t	Verified	genomic	225		tgtagggctttgcNttttt
325	IGR2049a_2	t/c	t on ref. sequence	Verified	genomic	332		gaccctgctacatNgtacataacaatagctata
326	IGR2051a_1	t/c	t on ref. sequence	Verified	genomic	470		ggcagggNtgtctgggcaaggaccagtc
327	IGR2051a_2	a/g		Verified	genomic	605		acacttattNtaactgtcacccctgggccat
328	IGR2052a_1	t/c		Verified	genomic	290		gctattttctcNtgttatttcagtgaccagg
329	IGR2052a_2	a/g		Verified	genomic	106		ttgacaaacactattNtaactgtcac
330	IGR2053a_1	a/g		Verified	genomic	225		cattcactgtgctgttcNgggctagagaaga
331	IGR2053a_2	a/c		Verified	genomic	369		cactgtgctgtgcagtgacNcctgttccccctaa gt
332	IGR2053a_3	t/c		Verified	genomic	544		gtgaccctattggatcttctcaNgccactgaggat at
333	IGR2054a_1	t/c		Verified	genomic	196		caagagggaatggagctttNgcagaggggctg
334	IGR2054a_2	ins/del	ins/del 6 bp	Verified	genomic	591		cttctgtctgtctctgNccctctgctc
335	IGR2055a_1	t/g		Verified	genomic	609		gagtggttttgagaagaNctgaggagtgaggac
336	IGR2056a_1	a/g		Verified	genomic	153		tttttaagactagtcNctgggcgcggt
337	IGR2056a_2	a/c		Verified	genomic	364		gagaaigggcgtgaacccgggaggNagagcttgc agt
338	IGR2056a_3	other/w +	Poly a	Verified	genomic	481		aagcgagactcactctcNaaaaaaacaaaa aaca
339	IGR2056a_4	g/c		Verified	genomic	432		gagctgcagtgagctgaNatcgccactgcact
340	IGR2057a_1	a/g		Verified	genomic	421		gaagtgaacaccaaataNcaagggctacaga
341	IGR2060a_1	g/c		Verified	genomic	514		ttgcaaccttNgcaaaaggtaa
342	IGR2061a_3	t/c		Verified	genomic	236		catacacagaagaaNgagttccatttactg
343	IGR2062a_1	ins/del	caaa repeat c on ref. sequence	Verified	genomic	195		aaaaacaaacaaacaaacaaacaaNacactgt catgcc
344	IGR2063b_1	g/c		Verified	genomic	218		ggcaataatNacatgatctc
345	IGR2063b_2	t/g	t on ref. sequence	Verified	genomic	369		agttggcagNggggcggttc

346	IGR2064a_1	a/c		Verified	genomic	364	aaactgtatttNcagtttcattt
347	IGR2064a_2	a/g		Verified	genomic	508	ccctcagagggcNggtagtgact
348	IGR2066a_1	t/c		Verified	genomic	459	cttcattctccctgccaaNgaagctgggtggcccc
349	IGR2067a_1	a/g		Verified	genomic	163	agccactacttgggcNgtcagctc
350	IGR2067a_2	a/g		Verified	genomic	243	cacacttctccacNagaataaagaagca
351	IGR2067a_3	t/c		Verified	genomic	266	agcaagcagctgttNctctcttggggccc
352	IGR2067a_4	a/g		Verified	genomic	485	agcctgagccNgcgcagcccagac
353	IGR2068a_1	other/w	ca repeat	Verified	genomic	354	acacacacacacNtttttgagagagag
354	IGR2068a_2	g/c		Verified	genomic	70	atgttagtgtgtgagaaNgtgtgagaggtactcg
355	IGR2069a_1	a/g	g in ref. sequence	Verified	genomic	394	ttatgttccattgtacNtattcaccatattt
356	IGR2069a_2	t/c		Verified	genomic	425	atccactctcNtgtcatggacatctg
357	IGR2070a_1	t/c		Verified	genomic	551	tctaaagaaaaagaaagcNgtgaaltcttgac
358	IGR2071a_1	t/g	g on ref. sequence	Verified	genomic	165	gctctgtccaggcaggggNctccgaggtgagtg
359	IGR2071a_2	a/t	a on ref. sequence	Verified	genomic	171	ccaggcagggggctcgcNggtagtgtggcct
360	IGR2071a_3	a/g	a in ref. sequence	Verified	genomic	365	agagaaggggaactggcNtgtgtggctgggctgtg
361	IGR2072a_1	a/g	a in ref. sequence	Verified	genomic	312	gcaggctcagtggaagagaggNgtctcctatg
362	IGR2072a_2	t/c	t on ref. sequence	Verified	genomic	408	atggggaactctcctaNactgtggaggcgtg
363	IGR2073a_1	a/c	a in ref. sequence	Verified	genomic	94	agtcatggcactaNatggagcccagg
364	IGR2073a_2	a/g	a in ref. sequence	Verified	genomic	313	caccaggagggttcagcNcccactgtgg
365	IGR2073a_3	t/c	c in ref. sequence	Verified	genomic	379	gcattccagcgcccNggccagtggtcc
366	IGR2074a_1	ins/del		Verified	genomic	239	gagtaaggggtcNaggaggggggggtggc
367	IGR2076a_1	t/c	t on ref. sequence	Verified	genomic	184	gaacatactcataNccatgcttcccc
368	IGR2076a_2	other/w +	Poly t	Verified	genomic	647	tacactatgggttgtgcNttttttt

369	IGR2077a_1	other/w +	Poly t	Verified	genomic	148	tatggtttgtgcNttttttttt
370	IGR2078a_1	a/g	g in ref. sequence	Verified	genomic	197	gcagggtggggagaaNgccagactcaggggtg
371	IGR2078a_2	ins/del	ins/del "c"	Verified	genomic	67	ggccagccccccccNggaagtggat
372	IGR2079a_1	ins/del	Poly a	Verified	genomic	345	gtaaaaaaaaNocctacagggtaaaaag
373	IGR2079a_2	t/c	t on ref. sequence	Verified	genomic	582	ccccatgtgcaNgtcacctccctgtc
374	IGR2081a_1	a/g	a in ref. sequence	Verified	genomic	140	ccagcaggaaacaNatgcaca
375	IGR2081a_2	a/t	t in ref. sequence	Verified	genomic	315	gaaccagagagaccNttagggggg
376	IGR2081a_3	a/g	a in ref. sequence	Verified	genomic	622	gccggcagagtcaccNgggctggcc
377	IGR2083a_1	t/c		Verified	genomic	372	aaatggggccaggNgcgggtggctca
378	IGR2083a_2	ins/del		Not yet verified	genomic	199	ccgtcttaaaaaaaaaNNNgtgggtgtggtg
379	IGR2083a_3	a/g	g in ref. sequence	Verified	genomic	572	aattgctgaacccNggaggcagaggtt
380	IGR2084a_2	ins/del	ccaa repeat	Verified	genomic	166	ccaaccaaccaNccaaatggtattacttc
381	IGR2085a_1	t/c	c on ref. sequence	Verified	genomic	131	cacttaccttgccNgcgccaccc
382	IGR2085a_2	a/g	a on ref. sequence	Verified	genomic	249	tcctcttgaacctNtgtgatttct
383	IGR2085a_3	a/g	a on ref. sequence	Verified	genomic	437	tggtcaacagtcaccaNctgagcccagcc
384	IGR2085a_4	a/g		Verified	genomic	368	cttgaggigccicNtaagagggtccaatga
385	IGR2085a_5	t/c		Verified	genomic	538	ttattccagtcacctNgagtcattccagtc
386	IGR2087a_3	other other/w	gaa repeat	Not yet verified	genomic	193	agggaagaagaagaaNcaagaggaagagga
387	IGR2087a_4	+	Poly a	Verified	genomic	504	gaaagccaaaaataaaaaaaaaNcaacagaa
388	IGR2090a_1	a/c	a in ref. sequence	Verified	genomic	219	agtcaggctgtctcggcNgctaaaaagagggc
389	IGR2090a_2	t/c		Verified	genomic	360	tgttgggtggggctcNagcgttaccgccg
390	IGR2090a_3	t/c	c on ref. sequence	Verified	genomic	444	ttcaccattgtctcNctattcccttt

391	IGR2090a_4	other/w +	Poly t	Verified	genomic	532		acttacctgctgaaatgcactgNttttttt
392	IGR2091a_1	t/g	a in ref. sequence	Verified	genomic	581		taatgacattccctctgtaNgaatgtgccaatgtgga
393	IGR2091a_3	a/c		Not yet verified	genomic	391		gatcacattaNttgcctgagtt
394	IGR2091a_4	t/c		Not yet verified	genomic	404		ttgcctgagttcNcaagttggttaagaga
395	IGR2091a_5	ins/del		Not yet verified	genomic	547		tctcatcaataaataatttatNNNcttcatt
396	IGR2092a_2	ins/del	Poly a	Verified	genomic	435		aaaaaaaaaaaaNggccaggcg
397	IGR2093a_1	ins/del	Poly a	Verified	genomic	229		aaaaaaaaaaNgccctagaccctctg
398	IGR2093a_2	a/g	g in ref. sequence	Not yet verified	genomic	123		ttggaggctgaggcNgaagaatcgct
399	IGR2093a_3	t/c		Verified	genomic	181		agattgcccactgNgcttcagct
400	IGR2093a_4	a/g	g in ref. sequence	Verified	genomic	318		gggagacccggaggaggNtagggaagt
401	IGR2095a_1	t/c	c on ref. sequence	Verified	genomic	421		caacagcctggcagNgaggcctgtct
402	IGR2096a_1	a/c	c in ref. sequence	Verified	genomic	112		actagagggtttttaNagagaagtgcacatgat
403	IGR2096a_2	a/g		Verified	genomic	498		taagggaatacggttttgNacgtaagtgtgagatgcc
404	IGR2097a_1	a/c		Not yet verified	genomic	58		cagggtggaaNtgtgaatctggggagag
405	IGR2097a_2	ins/del	Poly a	Verified	genomic	463		aagactctgtctcNaaaaa
406	IGR2101a_1	t/c		Not yet verified	genomic	283		ccagaatagagaccacNtccatccctcctt
407	IGR2102a_1	g/c	g on ref. sequence	Verified	genomic	166		gaacttagatttgcgNccccttagcattcaac
408	IGR2102a_2	t/g	g on ref. sequence	Verified	genomic	223		caatgcatgatcctNctgagccctcagc
409	IGR2105a_1	a/t		Not yet verified	genomic	493		ttgalactcagtaNgtacagcttatt
410	IGR2106a_1	other/w +	ct repeat c on ref. sequence	Verified	genomic	137		caggcaacaaaNtctccctccct
411	IGR2107a_1	t/c		Verified	genomic	300		ccttgtctcaaNtgtctcagctctatc



412	IGR2107a_2	t/c	t on ref. sequence	Verified	genomic	564	ccaaaggctNcaggctctggc
413	IGR2108a_1	ins/del		Verified	genomic	360	ccattccctgagcNcaggtgcctttct
414	IGR2109a_1	a/g		Verified	genomic	400	ggccaggctggtctcNgctagactcaagtg
415	IGR2110a_1	t/c		Not yet verified	genomic	286	tgtttgagacagggtcttgNctgtctgccaggatgg
416	IGR2110a_2	other/w +	Poly t	Verified	genomic	420	atgccagctaNttttt
417	IGR2111a_1	a/g		Verified	genomic	55	ccaccgcaccggccaNttttattgttttaaa
418	IGR2111a_3	t/c	c on ref. sequence	Verified	genomic	516	ttgccaacatttggtatNatcagctctcaatttt
419	IGR2112a_1	other/w +	Poly t	Verified	genomic	285	ttttttttNctgagacagagctctcgct
420	IGR2114a_1	other/w +		Verified	genomic	3331	caattgacttccctNaaaaa
421	IGR2117a_1	a/g	Poly a	Verified	genomic	355	aagggtgctctagNgcacacactcctctcc
422	IGR2121a_1	other/w +	Poly a	Verified	genomic	609	aataaagtattactttNaaaaaaaaa
423	IGR2121a_2	a/t		Verified	genomic	117	gaggcctgacagNttgaaggggttg
424	IGR2121a_3	t/c		Verified	genomic	815	cctctgggtNtttccaaatca
425	IGR2123a_1	a/g	g in ref. sequence	Verified	genomic	230	ttgccagaacacNgggtcagagagcaagag
426	IGR2125a_1	other/w +	Poly a	Verified	genomic	546	agagtgaactctgtctcaaaaaaaaaa
427	IGR2126a_1	a/g		Verified	genomic	364	cttcatactacttNgaaaaccatat
428	IGR2126a_2	other/w +	Poly a	Verified	genomic	47	gagactctgtctcNaaaaa
429	IGR2131a_1	other/w +	Poly a	Verified	genomic	249	aaaaaaaaaNgaacctctgtcgta
430	IGR2134a_1	a/g	a on ref. sequence	Verified	genomic	339	acttcagattaataNgtcttaaccat
431	IGR2136a_2	t/c		Verified	genomic	444	tgcgtagctccatttgagNagggaacctt
432	IGR2138a_1	a/g		Verified	genomic	375	atgatttgcNtcaaaagcag
433	IGR2144a_1	t/g		Not yet verified	genomic	384	tcagtaaccacatctgNtttccatgctctt
434	IGR2144a_2	other/w +	Poly a	Verified	genomic	463	acagaggtaaaagtgttttgaagcNaaaaa

435	IGR2144a_3	a/t		Verified	genomic	127		ctagcctaNggtctaggccc
436	IGR2144a_4	t/c		Verified	genomic	137		ggctaggcNctctgcctg
437	IGR2144a_5	a/g		Verified	genomic	166		ggaatcattacNtatcaaatca
438	IGR2147a_1	a/g		Not yet verified	genomic	354		accatggatgcNtagctgagttcctg
439	IGR2148a_1	t/c		Verified	genomic	253		acagttgtccctNagcatcttcgagga
440	IGR2148a_2	other/w	caaaaa repeat	Not yet verified	genomic	619		gagacttcatctNaaaaacaaaaacaaaaa
441	IGR2150a_1	g/c		Verified	genomic	90		caaaaa aaactctaccacNactgaaatctggtta
442	IGR2150a_2	t/g		Not yet verified	genomic	336		ccctggggctctaNtatttgggtgtac
443	IGR2150a_3	t/g		Verified	genomic	558		gaaagatatanaaattaaattaaa
444	IGR2151a_1	other/w		Verified	genomic	202		aaaaNtcatacaattagtctcacttaaa
445	IGR2151a_2	+	Poly a	Verified	genomic	566		catctgcaNccccagcttc
446	IGR2153a_1	a/g	a on ref. sequence	Verified	genomic	423		cagaacaaattagagaaaaactccNgtcaggctc tccac
447	IGR2154a_1	a/g		Not yet verified	genomic	389		acaacaaacgggtaNatatttttaggtctc
448	IGR2155a_1	a/c		Not yet verified	genomic	398		attattagtcNaataatcacc
449	IGR2155a_2	a/g		Not yet verified	genomic	619		aaggcgggtNcagtggtcac
450	IGR2156a_1	a/c		Not yet verified	genomic	176		ctgaggcaggltggatcatNtgagggtcagg
451	IGR2157a_1	a/c		Verified	genomic	254		tggagagacatgcatNcaaaccatatc
452	IGR2159a_1	other/w	Poly t	Verified	genomic	411		tttttttttNccgtgaacag
453	IGR2160a_1	other/w	ca repeat	Verified	genomic	601		acaggcgcgcNcacacacacacacaca
454	IGR2160a_2	a/g		Not yet verified	genomic	213		taaaattattcgNgagaatttttagaa
455	IGR2160a_3	a/g		Not yet verified	genomic	287		ccaagtacctggNctgtactgagagatga
456	IGR2162a_1	a/c		Not yet verified	genomic	350		acaaacaaaaaNcaaacccttatt

457	IGR2162a_3	t/c		Not yet verified	genomic	450		aaatatagNcaaaataact
458	IGR2164a_1	a/t		Not yet verified	genomic	557		tctggcccaacNtgggaaacccc
459	IGR2165a_1	ins/del	Poly a	Verified	genomic	473		ggaaaaaaaaaNcacacatgat
460	IGR2165a_2	ins/del		Not yet verified	genomic	271		ataaaaaaaaaNgatttattatgt
461	IGR2166a_2	a/c		Not yet verified	genomic	323		agtttcNgtttagaaaag
462	IGR2167a_1	t/c	c on ref. sequence	Verified	genomic	324		acttaagagaNlcaaaataatttt
463	IGR2167a_2	a/t		Not yet verified	genomic	207		tttaaaacttNtaaaggaat
464	IGR2168a_1	ins/del		Not yet verified	genomic	341		tgtttctttttctttcttNtttttttagacggag
465	IGR2175a_1	a/g	g in ref. sequence	Verified	genomic	310		tggggccaaaaatctcNtctgactccagtg
466	IGR2175a_2	a/g	g in ref. sequence	Verified	genomic	526		tccaagggtcacatNgttactatgtatgtt
467	IGR2176a_1	a/g	g in ref. sequence	Verified	genomic	119		gaagcaagactgtcNggaacactggactc
468	IGR2176a_2	a/g		Not yet verified	genomic	399		aaccatctgtttgtgtcNtgaggctctctgtat
469	IGR2177a_1	a/c	c in ref. sequence	Verified	genomic	325		tgatgatcacgcaacNcagctgaagaatgat
470	IGR2178a_1	a/g		Verified	genomic	138		ccatcctaaatactactacaagatgcNtttgacgtata
471	IGR2179a_1	a/g		Verified	genomic	284		aga
		other/w						aaagtcaaaaaatcNaaaggagatgagca
472	IGR2179a_2	+	Poly t	Verified	genomic	371		ttctgggaaaaggaaagtcNtttttttttt
473	IGR2179a_3	ins/del		Not yet verified	genomic	470		taatctctgccctcccaggNlcaagtgattctct
474	IGR2180a_1	a/g		Not yet verified	genomic	65		gtatttttagtagagacNgggtttccttatgtt
475	IGR2180a_2	g/c		Verified	genomic	383		tcaccagcaacctgttNtgagtgaaatc
476	IGR2181a_1	+	Poly t	Verified	genomic	260		aaaaagttttttttttNctaccaaatgtacag

477	IGR2181a_2	t/c		Verified	genomic	416	attacattataattacaNgcataat
478	IGR2181a_3	a/g		Verified	genomic	614	ccaagaaagaggNgtcatgggtaa
479	IGR2181a_4	a/c		Verified	genomic	83	gtggaggctgaNagtaggcgagttt
480	IGR2182a_1	a/g		Verified	genomic	115	tgccccaagaaagaggNgtcatgggtaaacc
481	IGR2184a_1	other/w +	Poly t	Verified	genomic	58	tccttcatttagcccgaaagactcccttagcaNttttt
482	IGR2184a_4	a/t		Not yet verified	genomic	448	tgccatgttggtNgtctgcaccc
483	IGR2184a_5	ins/del	ins/del t	Verified	genomic	380	tatttttttttaagtacNttaagttctagggt
484	IGR2185a_2	t/c		Not yet verified	genomic	420	gttctagatccNtgaggaatc
485	IGR2185a_3	t/g		Not yet verified	genomic	453	ttccacaatggtNgaactagttt
486	IGR2186a_1	a/t		Not yet verified	genomic	184	gttcataatacttNtccccctgttt
487	IGR2188a_1	t/c		Not yet verified	genomic	549	tttgctgaagttgNttatcaacttaa
488	IGR2189a_1	a/g		Verified	genomic	475	atatgatgcattacNtttatcgatttg
489	IGR2189a_2	t/c		Verified	genomic	252	ccctgtctgtgcnnggttttcaa
490	IGR2190a_2	t/c		Not yet verified	genomic	343	ttatgccNcaatttc
491	IGR2190a_4	a/g		Not yet verified	genomic	326	ttggttgataNgctattaatta
492	IGR2191a_1	a/g		Not yet verified	genomic	286	tggtgattttNgatgttcc
493	IGR2191a_2	t/c		Not yet verified	genomic	353	actgctttgaatgNgtccagatttc
494	IGR2191a_3	a/g		Not yet verified	genomic	390	ttgtgtctttgttctcNttggtttcaaa
495	IGR2191a_4	a/t		Not yet verified	genomic	498	gcgggttttgaNtgagtttctt
496	IGR2192a_1	t/c		Not yet verified	genomic	515	tttttttgNttccatttgc
497	IGR2192a_2	t/c		Verified	genomic	506	ccccgcNttttttg
498	IGR2192a_3	t/g		Verified	genomic	359	ttatgaatctgggNgctccigtatt
499	IGR2193a_1	t/g		Verified	genomic	361	ttcaggagctcttNtaaggcagg

500	IGR2193a_2	t/g	Verified	genomic	376	ggcctggNgtgacaaa
501	IGR2193a_3	t/c	Verified	genomic	423	attttatttcNcctcacttat
502	IGR2194a_1	a/g	Verified	genomic	57	cagagagatccNctgttagtctga
503	IGR2194a_2	a/g	Verified	genomic	196	agagtatctttNgggtgtctctg
504	IGR2194a_3	t/c	Verified	genomic	220	atttctgaaNttgaatgttgcc
505	IGR2197a_1	other/w	Not yet	genomic	498	gtctaactagtcccaNcgagatgagccgggt
506	IGR2198a_1	+	verified	genomic	233	cagtagacgaacNatgcaaaatacca
507	IGR2198a_3	a/t	Not yet	genomic	98	tctggggctttNacgttttttagtg
508	IGR2199a_1	t/c	Verified	genomic	357	cagagataagaaNtagttccaagaa
509	IGR2200a_1	a/c	Verified	genomic	176	acaggcttNgacagaggacttggga
510	IGR2202a_1	t/c	Verified	genomic	308	tcactaaattctagaaaNaaagattcttaggcagt
511	IGR2202a_2	a/t	Not yet	genomic	330	taggcagtgtctgNtatttaaaaaaatcat
512	IGR2202a_3	a/g	Verified	genomic	528	caggactaaagtgaNctactctgaaaga
513	IGR2202a_4	ins/del	Not yet	genomic	622	tttttgacacacacaatgacactNcacttagagaa
514	IGR2203a_1	a/g	Verified	genomic	329	gtgc
515	IGR2203a_2	other/w	Verified	genomic	216	acaaacaaataaacaNtaaaacaaaaccaca
516	IGR2204a_1	+	Verified	genomic	584	cagagtattctgtgtttNaaaaaaaaa
517	IGR2206b_1	ins/del	Not yet	genomic	520	acagcaaaggccctttNactgaaggactc
518	IGR2207a_1	t/g	Not yet	genomic	428	aggggcggtgtcagNagaagagctgggccc
519	IGR2209a_1	a/c	verified	genomic	153	gggtataataattttNcgttcalcagacctc
520	IGR2209a_2	t/g	Verified	genomic	234	tgtgggggaagggtNctatagccaagat
521	IGR2209a_3	g/c	Verified	genomic	462	gcactttccctcaaNctggagaccaccag
522	IGR2210a_1	a/g	Verified	genomic	297	ggccatcagaatctcNagtgtatcttctaa
523	IGR2210a_2	g/c	Verified	genomic	610	tcctgctaaggNctgtgagggcc
524	IGR2213a_1	t/c	Verified	genomic	314	catctagggtgtaNgttccatgagg
525	IGR2214a_1	g/c	Verified	genomic	318	cggtaactgtggagcaNagagggtggctcccaa
526	IGR2215a_1	a/t	Verified	genomic	198	taaccaccaggctccagaNgtcgcctagaatcc
		a/g	Verified	genomic		cag
		a/g	Verified	genomic		agatctggagagattccccacNagagtcattttc
		a/g	Verified	genomic		cc

		other/w +		Not yet verified	genomic	214		cagagactttgtctgagNaaaaaagaaaaa
527	IGR2221a_1			Verified	genomic	261		a
528	IGR2221a_2	a/t		Verified	genomic			gaaaaaaggaaaaaNattagcatgttta
529	IGR2221a_3	t/g		Verified	genomic	289		gctatcaatatcaaggcacttgagNgctctatggat
530	IGR2221a_4	ins/del		Not yet verified	genomic	231		at
531	IGR2221a_5	t/c		Not yet verified	genomic	79		aaaaagaaaaaNaaagaaaa
532	IGR2222a_1	a/g	g in ref. sequence	Verified	genomic	446		aaaaattagccaagtgNggtaggcaggcac
533	IGR2222a_2	t/c	c on ref. sequence	Verified	genomic	476		gcacatgggggcacaNggtcacactcacca
534	IGR2223a_1	ins/del		Not yet verified	genomic	194		cagagtgcacgcgaNagcaccgcccgcat
535	IGR2223a_2	other/w +		Not yet verified	genomic	485		tttttggttcctctatttaaNatggtactttgtga
536	IGR2224a_1	a/g	at repeat	Verified	genomic	300		gcctcaaggNaagaatatt
537	IGR2224a_2	t/c		Verified	genomic	387		ctcaaccatgccNccctcttctggggc
538	IGR2224a_3	t/c		Verified	genomic	389		gagtctagtaaatgacNaccaaglactaagac
539	IGR2224a_4	t/c		Verified	genomic	582		cctagtaaattgactaNcaagtactaagaccaa
540	IGR2225a_1	a/c		Verified	genomic	464		tgaggacatcacagNigtctccagaaaaggta
541	IGR2226a_1	a/g	g in ref. sequence	Verified	genomic	204		agtcctggctctcaNagtgcccatgtctatt
542	IGR2226a_2	t/g	t on ref. sequence	Verified	genomic	426		taaagagaaagaaNcattgtctctgatt
543	IGR2226a_3	t/c		Verified	genomic	524		catgtctctatggcttNgccaaaaggactgaa
544	IGR2226a_4	t/c		Verified	genomic	272		ggaatgtgtgaaNtgcatactcagtgt
545	IGR2228a_1	g/c	g on ref. sequence	Verified	genomic	450		taagaggtagtatcaNgtacaaaaagtattct
546	IGR2229a_1	t/g	t on ref. sequence	Verified	genomic	298		gatattcacaglatagtgNggaagaccaacatta
547	IGR2230a_1	t/c		Verified	genomic	608		ttttctgtgtgtttNttttttccalcac
548	IGR2233a_1	g/c	g on ref. sequence	Verified	genomic	597		calacttttagccaNtttaggggtgatt
549	IGR2234a_1	a/g		Verified	genomic	362		
				Verified	genomic			tgtgaaacctgggNaagttatttaa
				Verified	genomic			taatccagcacaactcNggaggctgagaca

550	IGR2234a_2	g/c	g on ref. sequence	Verified	genomic	395	gaatcttgaccigNgaggcagaggttgca
551	IGR2235a_1	t/c		Verified	genomic	153	gtgttcacatgNcatgtggccaagga
552	IGR2235a_2	t/g		Verified	genomic	386	agttaaaagctttaNaattatacaaat
553	IGR2236a_1	a/g		Verified	genomic	256	ttacctagtcacccgNtcacagatacatca
554	IGR2236a_2	ins/del		Not yet verified	genomic	321	atttgaattacggagtcagatNttggctcttctact
555	IGR2236a_3	t/c		Verified	genomic	441	gaagggccaggcacaNgctcttctcctcagtcg
556	IGR2237a_1	a/g		Verified	genomic	395	agcaaggcctctaacNctgtcctcctaaaaatc
557	IGR2237a_3	a/g		Verified	genomic	619	tggccaatgacccccNggctctttttgtgac
558	IGR2238a_1	a/g		Verified	genomic	92	cctgtctgtctcNggttccaccctg
559	IGR2238a_2	a/c		Verified	genomic	115	accctgggccaatgaNccccgggtctcttt
560	IGR2238a_3	ins/del		Not yet verified	genomic	247	gctccactctactattNactcttccaacct
561	IGR2238a_4	a/g		Not yet verified	genomic	442	tggatctggctNcgctctgcctaaaca
562	IGR2239a_1	a/c		Not yet verified	genomic	256	ctgttctcgcactgNtgggcagtggtggg
563	IGR2240a_1	t/c		Verified	genomic	545	agtgtcattttgagaNagggccagagcat
564	IGR2242a_1	t/g		Not yet verified	genomic	119	gtgggttaagattNgggtcacgagtcta
565	IGR2243a_1	a/c	c in ref. sequence	Verified	genomic	256	tgccccctgtatNgaagagagggc
566	IGR2244a_1	other/w +	Poly t	Verified	genomic	220	tttttttNggctcctgaacc
567	IGR2244a_2	g/c	c on ref. sequence	Not yet verified	genomic	73	ccaccagcctggNtaattttgt
568	IGR2244a_3	t/c	t on ref. sequence	Verified	genomic	469	gaggttcaagNtccagggtctct
569	IGR2244a_4	t/c		Verified	genomic	576	tgagggtctcNcatctctaaaga
570	IGR2245a_2	a/g		Verified	genomic	145	aggacaatgggNagggagtgaggag
571	IGR2245a_3	a/g	g in ref. sequence	Verified	genomic	397	attacaggcaccNccaccacgcaggg
572	IGR2245a_4	t/g		Verified	genomic	434	atttttagcgaNacgaggtttcacca
573	IGR2245a_5	t/c		Verified	genomic	574	tgtctgtccaNaggtctggacag
574	IGR2245a_6	ins/del	Poly t	Verified	genomic	261	tttttttNagacggag
575	IGR2246a_1	ins/del		Verified	genomic	629	ccaccacgcccctgccaNtatttttta

576	IGR2248a_1	t/g	t on ref. sequence	Verified	genomic	145	ctagatgcagtgNtcagcaggccag
577	IGR2249a_1	a/g	a in ref. sequence	Verified	genomic	289	aactgaanGgtccaatttctt
578	IGR2250a_1	t/c		Verified	genomic	145	ggctcagcaccacaNccagcagggtt
579	IGR2250a_2	t/c	t on ref. sequence	Verified	genomic	253	ttctgtgtgtgcaNtggggcctca
580	IGR2250a_3	t/g	t on ref. sequence	Verified	genomic	302	acaccctagggtcacNgagaggcctcc
581	IGR2250a_4	t/c	c on ref. sequence	Verified	genomic	389	tatcaatgagggtctaNtcactgggtacttac
582	IGR2251a_1	g/c	c on ref. sequence	Verified	genomic	269	taatccagctttgNaggcagaagcagg
583	IGR2251a_2	a/t		Verified	genomic	360	aaacacaaaaattNgtgggcgtgtgg
584	IGR2251a_3	a/g	g in ref. sequence	Verified	genomic	392	cagctactcggagNctgaggcaggag
585	IGR2251a_4	g/c		Verified	genomic	436	aggcgaagattgcaNtgagccaagaacg
586	IGR2251a_5	other/w +	Poly a	Verified	genomic	526	tgacagaggagagactcttctctctNaaaaaa
587	IGR2252a_1	a/g		Verified	genomic	323	cccaactagagtaaNtcttgacacacag
588	IGR2252a_2	t/c		Verified	genomic	405	tgccatcaggaNggaggccagactg
589	IGR2253a_1	a/g	g in ref. sequence	Verified	genomic	246	ccggctccagcccNagcgcgagaa
590	IGR2254a_1	t/g		Verified	genomic	68	agcgcggcctggggtcNgggaacgcgg
591	IGR2255a_1	a/c		Not yet verified	genomic	477	ttctagtagccNtattaataaaatt
592	IGR2255a_2	a/g		Verified	genomic	217	gaggctgggagctNtgactttcatt
593	IGR2255a_3	other/w +	Poly a	Verified	genomic	387	tcagaagctaactggNaaaaaaa
594	IGR2256a_1	t/c		Verified	genomic	510	atcatagtcaccgcagNcctgaactcctaagctt
595	IGR2256a_2	other/w +	Poly a	Verified	genomic	344	ttctcaggatttgNaaaaaa
596	IGR2256a_3	a/g		Verified	genomic	179	tgaataaiaactttaNtggtatatttaa
597	IGR2257a_1	a/g	g in ref. sequence	Verified	genomic	423	atataatgtgtgNgtaaagaatat
598	IGR2257a_2	t/c	t on ref. sequence	Verified	genomic	508	cagcagatttttaaNaaggaaaatctaa



599	IGR2257a_3	g/c		Verified	genomic	621	ctatttacttcNtgaagatggatgg
600	IGR2258a_1	other/w +	Poly t	Verified	genomic	575	tgcaNttttttt
601	IGR2259a_1	other/w +	Poly t	Verified	genomic	234	gctaNttttttg
602	IGR2260a_1	t/c		Not yet verified	genomic	582	tcaacaataNgttaataataa
603	IGR2261a_1	t/c		Verified	genomic	608	ggctgaggaggNggatcacc
604	IGR2262a_1	ins/del	Poly a	Verified	genomic	332	aagactccgtctcNaaaaaa
605	IGR2262a_3	a/g	a in ref. sequence	Verified	genomic	425	ttcagagcNtctgtccag
606	IGR2263b_1	g/c	g on ref. sequence	Verified	genomic	411	ttcaagtgaltctNctgtctagcctcc
607	IGR2264a_1	other/w +		Verified	genomic	318	taatagctgttttttNtgccaaaaatcacgt
608	IGR2265a_1	t/c	c on ref. sequence	Verified	genomic	249	ccccacaattNggctcaa
609	IGR2265a_2	t/c	t on ref. sequence	Verified	genomic	340	gtagtagaaaNgtaaatt
610	IGR2269a_1	a/g		Not yet verified	genomic	270	tatgtacaagtatctNtttgactgtct
611	IGR2272a_1	a/t		Verified	genomic	540	ttttaaaaaaaNttttaaggcatagga
612	IGR2272a_2	t/c		Verified	genomic	163	ctcttggaaggctgNggcaggaaagatgc
613	IGR2272a_3	a/g	g in ref. sequence	Verified	genomic	384	tacaaaaatacaaaaaaattagccNggcgtgtg g
614	IGR2272a_4	t/c		Verified	genomic	395	ttagccgggctgtgtgNgggcacctgtagtaccc
615	IGR2272a_5	g/c		Not yet verified	genomic	462	tttgaaccccgaggcgggNgtgcaatgagtg gagatt
616	IGR2273a_1	other/w +	Poly t	Verified	genomic	388	cccttatccacagNttttttttt
617	IGR2274a_1	t/g		Verified	genomic	311	tctcatgtcacccgcaNtcacattgtgtgtg
618	IGR2274a_2	g/c		Verified	genomic	381	tcattagccgtggcttNcattctctctgaac
619	IGR2274a_3	t/c	c on ref. sequence	Verified	genomic	539	atactactatggNcccttgcctccg
620	IGR2276a_1	t/c	c on ref. sequence	Verified	genomic	113	cactactatctcNtgagcacaaaaag

621	IGR2276a_2	a/c	c in ref. sequence	Verified	genomic	359	aaatgagtagcctcNtttgagagacagag
622	IGR2277a_1	a/g other/w	a in ref. sequence	Verified	genomic	143	galcatcaagggtcNcaaaatcaagct
623	IGR2277a_2	+	Poly t	Verified	genomic	485	galgcaagaaNtttttttttttt
624	IGR2279a_1	a/g	a in ref. sequence	Verified	genomic	165	acaggcatccaccaccNigccctggtaatttt
625	IGR2279a_2	t/c	c on ref. sequence	Verified	genomic	256	catgtatctgccNgccicagccttcacaa
626	IGR2279a_3	other/w +	Poly t	Verified	genomic	310	ccaatgcgccTggccNtttttt
627	IGR2279a_4	g/c		Verified	genomic	108	ccttgccctccagggtNaagcagttctcctg
628	IGR2279a_5	t/c		Verified	genomic	277	gccttccaaagtcNaggattacaggt
629	IGR2281a_1	a/c other/w		Verified	genomic	144	catctgcattaNtataaagaaatac
630	IGR2281a_2	+	Poly t	Verified	genomic	87	aaattaattttttcttccNttttttt
631	IGR2281a_3	a/t		Not yet verified	genomic	72	taattttttaaataaattttttcttc
632	IGR2283a_2	ins/del	ins/del 2bp t on ref. sequence	Verified	genomic	574	ccTggctctcNtagttatt
633	IGR2284a_1	t/c		Verified	genomic	486	gccttcactttccaNataccaccatcagc
634	IGR2284a_2	t/c		Not yet verified	genomic	536	tgccaagtactattNtaactctcTgagaatac
635	IGR2285a_1	a/c		Verified	genomic	171	gaaaaatgaagcNggagaaaaaatgaa
636	IGR2286a_1	a/c		Not yet verified	genomic	261	tgtctacatgcNagacaatca
637	IGR2287a_1	t/c other/w	t on ref. sequence	Verified	genomic	107	cttgggaggcNgaggcaggcaga
638	IGR2287a_2	+	Poly a	Verified	genomic	188	gtgaaaccccgTctctactaiaaaaaatacNaaaaa aaaa
639	IGR2287a_3	other/w +	Poly a	Verified	genomic	351	acagagcgagactccgtctcNaaaaaaaaa
640	IGR2287a_4	t/c		Verified	genomic	463	ttgtaaggactgggNtttcaaaaaatctg
641	IGR2287a_7	t/c		Verified	genomic	463	tatagaccattgNaaggactggg
642	IGR2288a_1	t/c	t on ref. sequence	Verified	genomic	170	atggcaaaaagaNttattgaca

643	IGR2288a_2	a/g	a in ref. sequence	Verified	genomic	198	ggatgtgggtacNagaggaagagcagcc
644	IGR2289a_1	a/g	g in ref. sequence	Verified	genomic	215	cccaagtagctgggactNcagggtgtgtgccacca
645	IGR2291a_1	g/c	c on ref. sequence	Verified	genomic	153	ctgtaatcctagctacttNggaggctgaggcatga
646	IGR2291a_2	a/g		Not yet verified	genomic	548	tagcaagaagtNggaggagggtt
647	IGR2292a_1	a/c		Verified	genomic	256	gtctcatgtNatccccacc
648	IGR2292a_2	t/c	c on ref. sequence	Verified	genomic	589	tctatttatcttNaatttcctatt
649	IGR2292a_3	a/t		Verified	genomic	282	atggaattgtatcNtccctctttacaga
650	IGR2293a_3	ins/del	gt repeat	Verified	genomic	437	tgtgtgtgtNgtgtgtgtgtgtgtg
651	IGR2294a_1	t/c	c on ref. sequence	Verified	genomic	390	ccctgaaaaaNgggacactcc
652	IGR2294a_2	t/c		Verified	genomic	440	ttagcaaatggNacaccagga
653	IGR2294a_3	t/g		Verified	genomic	481	tcacagatccNatgtccatgga
654	IGR2295a_1	ins/del		Not yet verified	genomic	438	atttgtgttcNgcaatatgtgt
655	IGR2295a_2	a/g		Verified	genomic	535	tgcagctgaggNcctactggtagaa
656	IGR2297a_1	g/c	g on ref. sequence	Verified	genomic	65	taactcaagaaNattagagaaa
657	IGR2297a_2	t/c	c on ref. sequence	Verified	genomic	198	aaaacactcNtcaggata
658	IGR2297a_3	t/g	g on ref. sequence	Verified	genomic	487	ttctaaagaaaaNaatttcaaccca
659	IGR2297a_4	t/c	c on ref. sequence	Verified	genomic	588	gattttgtcacacNaggcctgccctaaaga
660	IGR2297a_5	a/c	c in ref. sequence	Verified	genomic	446	cctacaagccNgaagagag
661	IGR2298a_1	a/g	g in ref. sequence	Not yet verified	genomic	293	tttaaatgtaaatggNctaaatgtctcca
662	IGR2299a_1	a/g	g in ref. sequence	Not yet verified	genomic	592	caaagacacaaacNtgccagaatct
663	IGR2300a_2	t/c		Verified	genomic	606	ccaataacaggNtctgaaattg
664	IGR2303a_1	t/c	c on ref. sequence	Verified	genomic	189	ttttgtatctacNggcaaaatata

665	IGR2303a_2	g/c	g on ref. sequence	Verified	genomic	495	aataatcattagtNataatgagccc
666	IGR2304a_1	t/c		Verified	genomic	483	cttgatgttNgaatggcat
667	IGR2304a_2	a/g		Verified	genomic	667	gggtgagtgacaNiacagggtaaaaa
668	IGR2305a_1	a/t		Verified	genomic	253	tttctggataggaatNctgcataataatcattggt
669	IGR2308a_1	t/c	c on ref. sequence	Verified	genomic	339	tttgtatccttftgaagaaacNgctagtggcca
670	IGR2308a_2	a/g		Verified	genomic	561	taggtattgtcaaaattgNacigcattataggaca
671	IGR2309a_2	t/c		Verified	genomic	610	gatgtgttttttttNtgagacgg
672	IGR2310a_1	ins/del		Not yet verified	genomic	273	aattttgtattttNtagtagagatgggt
673	IGR2311a_1	a/g	g in ref. sequence	Verified	genomic	181	gccagctctggagtgcnGtggcatgatgtgg
674	IGR2311a_2	a/c	c in ref. sequence	Verified	genomic	207	tggctcacigcaaNctccacotcccggg
675	IGR2311a_3	ins/del		Not yet verified	genomic	525	caacctctgcctcctgggtNgcagttctctgcct
676	IGR2313a_1	other/w +	poly A	Not yet verified	genomic	499	aaaaaaaNcaactaag
677	IGR2313a_2	a/g		Not yet verified	genomic	370	taaccaggNtgtttcaggg
678	IGR2313a_3	a/g		Not yet verified	genomic	335	aaatgggggNtgggaggaca
679	IGR2313a_4	t/c		Not yet verified	genomic	531	cagattaaaaNcagtaaat
680	IGR2313a_5	ins/w+	C insert	Not yet verified	genomic	391	agtttggcNatgatagg
681	IGR2314a_1	ins/w+	varying number of GT repeats	Verified	genomic	560	atgttttcaNgtgtgtgtgt
682	IGR2315a_1	a/g		Not yet verified	genomic	369	cttcattgcNaagagtttgc
683	IGR2315a_2	t/c		Not yet verified	genomic	533	taatttcttaNgccctgtcttt
684	IGR2315a_3	a/g	G in ref	Not yet verified	genomic	211	aacatgccNctgaaca

685	IGR2316a_1	a/g	G in ref	Not yet verified	genomic	499	cccaggctNttagatga
686	IGR2316a_2	t/c	G in ref	Not yet verified	genomic	565	aaaccccgNtcdgataa
687	IGR2316a_3	a/g		Not yet verified	genomic	469	tgaaataaNccccaglc
688	IGR2321a_1	t/c		Not yet verified	genomic		tttgaaaaNgtcaaatag
689	IGR3000a_1	a/g	a in ref. sequence	Verified	genomic	224	ttttagaaNtgatacttt
690	IGR3000a_2	a/g		Verified	genomic	558	taagaaatatgtNtttctattatc
691	IGR3002a_1	g/c	g on ref. sequence	Verified	genomic	146	ctggcagNggtcgcaa
692	IGR3002a_2	a/g		Verified	genomic	511	atatgaacNacatagat
693	IGR3003a_1	a/g		Verified	genomic	494	tgaaaccccNtcttactt
694	IGR3004a_2	t/c	c on ref. sequence	Verified	genomic	430	gagtggaactctacNgcccagatttctc
695	IGR3004a_3	ins/del		Verified	genomic	285	atttctctctcttNtttcttctt
696	IGR3005a_1	t/c	t on ref. sequence	Verified	genomic	494	aggagtagNttagatagaa
697	IGR3005a_2	g/c	c on ref. sequence	Verified	genomic	538	agtagcacNactaccca
698	IGR3005a_3	a/c	c in ref. sequence	Verified	genomic	34	cccatgaaggcaccacNtcaactgcccagt
699	IGR3006a_1	other	gt repeat	Verified	genomic	234	ccagttctgacgatactcNtgtgtgtgtg
700	IGR3006a_2	t/g		Verified	genomic	227	cagttctgacNatactcgt
701	IGR3007a_1	t/c		Verified	genomic	458	cgtgaagccaNtgcgcca
702	IGR3007a_2	other/w		Verified	genomic	176	aaalactgtaccctgtgacNttttt
703	IGR3008a_1	+	Poly t	Verified	genomic	147	cacttattaNttaccata
704	IGR3008a_2	t/c		Verified	genomic	339	tgcatacaaNtctcactt
705	IGR3008a_3	a/c		Verified	genomic		atgcaactcNcacttcacc
706	IGR3013a_1	t/c	C in ref. sequence	Verified	genomic	342	cacatttatatgcNtgtgtgtg
707	IGR3016a_1	other	gt repeat	Verified	genomic	637	
		a/g	a in ref. sequence	Verified	genomic	636	ctgctggtacagctNtgtgttcatttttgc

708	IGR3018a_1	a/g	g in ref. sequence	Verified	genomic	238	gggcacagacaccccNccigigtggggccc
709	IGR3018a_2	t/g		Verified	genomic	191	gggcaccigtgttcNigatcgtttccttta
710	IGR3019a_1	a/g		Verified	genomic	205	ttgtttagaaaattttgcccNattgtaggctaata
711	IGR3019a_2	a/g		Verified	genomic	388	cagctttatgaagaNgcaatgttacag
712	IGR3020a_1	g/c	g on ref. sequence	Verified	genomic	172	gtcttgcgccctggctNtgttttagctggctcc
713	IGR3020a_2	a/c	c in ref. sequence	Verified	genomic	349	cttacttagcctagaNaacaaatataag
714	IGR3020a_3	a/g	a in ref. sequence	Verified	genomic	542	tataggaactacNataatgttaggtca
715	IGR3022a_1	a/t	t on ref. sequence	Verified	genomic	267	gctggagagctgtNctcactactgagcag
716	IGR3023a_1	g/c	c on ref. sequence	Verified	genomic	79	tcctcttagggcaNagtgcagcaggctccc
717	IGR3023a_2	ins/del	ct repeat	Verified	genomic	264	attctctctctNtctctctgatatg
718	IGR3023a_3	t/g	g on ref. sequence	Verified	genomic	368	ggcatgatcatatagcNcactgtaactcttg
719	IGR3023a_4	t/c	t on ref. sequence	Verified	genomic	580	gggattacagggtgtgaaNcaccatactcggctaa
720	IGR3029a_1	a/g	A in ref. sequence	Verified	genomic	201	ctggaggNcacagacagg
721	IGR3029a_2	a/g	A in ref. sequence	Verified	genomic	498	agtccaagNacaaagct
722	IGR3030a_1	t/c	T in ref. sequence	Verified	genomic	181	attcatgcNtgcctttt
723	IGR3032a_1	a/g	A in ref. sequence	Verified	genomic	158	actagggaNgccaaggc
724	IGR3032a_2	g/c	C in ref. sequence	Verified	genomic	281	gtaatcccaNctatcggg
725	IGR3035a_2	a/g	G in ref. sequence	Verified	genomic	223	gtcaggggaNlgatggaaa
726	IGR3036a_1	a/g		Verified	genomic	187	aaatacaNtaaaataa
727	IGR3037a_1	a/c		Verified	genomic	521	gggagaaccNtcaccag
728	IGR3038a_2	t/c		not yet verified	genomic	464	aaatacacagaaaNactttttgtgtt

729	IGR3039a_1	a/g	G in ref sequence	Verified	genomic	387	gggccagaggNtggaaagcgaag
730	IGR3040a_2	t/c		Verified	genomic	517	cccgctcacaNaggggagg
731	IGR3040a_3	t/c		Verified	genomic	133	acctgagaaNccaacacacga
732	IGR3041a_1	t/c	T in ref sequence	Verified	genomic	331	tcgtcacaNggaagat
733	IGR3042a_1	a/g		Verified	genomic	435	caccctagaNatgatggaa
734	IGR3043a_1	t/c		Verified	genomic	278	atagcccagtgatggNggctggcactgaact
735	IGR3044a_1	t/c		Verified	genomic	477	caggcatcaatgcagaNttagtgtttttcaggg
736	IGR3044a_2	t/c		Verified	genomic	513	ctctggcagactttttcNcigtcacatctccca
737	IGR3045a_1	t/g		Verified	genomic	137	aagcatggagcagtgtagNcaaggaccitgtgga
738	IGR3046a_1	a/g		Verified	genomic	293	aata tgggccccagtgctNgcccagggtccaagcc
739	IGR3047a_1	t/g		Verified	genomic	455	cagactctctccctNgccagagatattgccttgt
740	IGR3047a_2	a/g		Verified	genomic	522	ttagctggcctgtgccNggactggggagagtaa
741	IGR3047a_3	t/c		Verified	genomic	609	gtgatgtctctactcNgtctgcattacatagca
742	IGR3049a_1	t/c		Verified	genomic	437	tttatcacaccctNattctgcagcagacaga
743	IGR3049a_2	t/c		Verified	genomic	611	gtccacgggctgcctgNltgccagacggggctcc a
744	IGR3050a_1	t/c		Verified	genomic	224	ttctgaatactagatcNgaagaagtgctctcc
745	IGR3051a_1	a/t		Verified	genomic	667	tttagagatagaaggaaNggaaggctgttagat
746	IGR3053a_1	a/g		Verified	genomic	364	ggggtccttagaaaNggcttttcttaggaa
747	IGR3053a_2	t/c		Verified	genomic	481	gttaacagtgacatggNggcccagtgaggagac a
748	IGR3054a_1	other/w +	poly A	Verified	genomic	597	cclagtgaattggtNaaaaaaaa
749	IGR3055a_1	t/c		Verified	genomic	375	ccctctctaccatNctccagcagaaggacag
750	IGR3055a_2	other/w +	Poly a	Verified	genomic	133	aaaaaaaaaaaaNttgcttaatacatt
751	IGR3056a_1	a/g		Verified	genomic	328	cttcaaaaaagatgacaNtaatacctgtctctagg
752	IGR3056a_2	a/g		Verified	genomic	383	aaatatcagtgagcNictgacacattacaggcc
753	IGR3057a_1	t/g		Verified	genomic	549	ttagcagtcacictctcattcNctacttctctagcccc tg
754	IGR3059a_1	a/t		Not yet verified	genomic	94	tatatatatatatNtatttcacggtttgggtcta

755	IGR3059a_2	other/w	at repeat	Verified	genomic	63	caacaacNtatatatata
756	IGR3060a_1	g/c		Verified	genomic	102	tcactgttaaggNctctggaattcttt
757	IGR3061a_1	t/c		Verified	genomic	362	tttaattattgtataNttttaccagaagt
758	IGR3061a_2	t/c		Verified	genomic	592	caatattgtcalcaNacttttaaaagcatgacttc
759	IGR3062a_2	t/c		Verified	genomic	139	tgaacataattataaNggcgccttatgccttaa
760	IGR3064a_1	t/c		Verified	genomic	616	cttgccaaggtagtNgactttcttgaataaa
761	IGR3065a_1	a/g		Verified	genomic	358	tttaccatttttaatacaNggtgtctttttattgctgag
762	IGR3066a_1	a/t		Verified	genomic	351	tcTgaagttgcgcctgNaccTgcctccagctcttg
763	IGR3068a_1	t/c		Not yet verified	genomic	337	gaagttcccNgtttagcaggg
764	IGR3072a_1	ins/del	caaa repeat	Verified	genomic	383	caaaacaaacaaacaaacaaaNaactagccggg
765	IGR3072a_2	a/t	t on ref. sequence	Verified	genomic	578	taaaataaaataaaaaNaaaacgaaaaataattt
766	IGR3078a_1	a/g		Verified	genomic	313	gggcaggagtagtgNcaagcactagag
767	IGR3079a_1	a/g		Not yet verified	genomic	120	cctcgaataaagtcNctctcagtatac
768	IGR3081a_1	t/g	t on ref. sequence	Verified	genomic	317	gagtcctattcttcttNggggtgcacaccg
769	IGR3081a_2	a/g		Verified	genomic	286	gaaacgaccagNaatgcgcctcgcg
770	IGR3083a_1	g/c	g on ref. sequence	Not yet verified	genomic	397	gctcgggcgcgtnGccccgggccagacccca
771	IGR3084a_1	t/c	t on ref. sequence	Verified	genomic	504	cggcaggctgNcagagcttt
772	IGR3086a_1	a/t		Verified	genomic	234	ttgagatggtNttggcgtgacc
773	IGR3087a_1	other/w	Poly t	Verified	genomic	325	ggaacaatctcNtttt
774	IGR3087a_2	ins/del		Verified	genomic	90	ttccagattNgacataa
775	IGR3087a_3	t/c		Verified	genomic	185	gtatgtaaaNctctatctg
776	IGR3088a_1	other/w	Poly t	Verified	genomic	108	tgataagtctgcNtttttt
777	IGR3088a_2	a/t	t on ref. sequence	Verified	genomic	269	gcaaacaccNccacacca
778	IGR3089a_1	a/g		Verified	genomic	559	ctagaacaaaaaNgtaagaaaaaa
779	IGR3090a_1	g/c		Verified	genomic	558	agttgctaNaacatctgt



	other/w +	Poly a	Verified	genomic		257		actcgcgtctcNaaaaaaaaa
780 IGR3095a_1	a/t		Not yet verified	genomic		178		aaattgcttNaccggaggc
781 IGR3095a_2	t/c	t on ref. sequence	Verified	genomic		316		ccggagaaNagctgagaa
782 IGR3096a_1	a/g		Verified	genomic		406		aggTgcacNgatctctaaa
783 IGR3096a_2	t/c		Verified	genomic		424		aaagctgtccNgctgcc
784 IGR3096a_3	a/g		Verified	genomic		338		agaaatcatgagagcagNaaaggagagaaagggta
785 IGR3097a_1	a/c		Verified	genomic		472		acaacaacaacaaNaaaaagagctcaaatgg
786 IGR3097a_2	a/t		Verified	genomic		373		glttttgtaaaaacNacaaatttattata
787 IGR3098a_1	t/c		Verified	genomic		243		ggcaggcgcatcaNaggctcaagagatccaga
788 IGR3100a_1	t/c		Verified	genomic		326		aaggggcNgacatggc
789 IGR3103a_1	t/c		Verified	genomic		231		agtgtgNgatcttgg
790 IGR3105a_1	a/g		Verified	genomic		575		ttaccatNtaacccaa
791 IGR3105a_2	ins/w+	CA repeat	Verified	genomic		187		tgtgtgNagacagaatcttg
792 IGR3105a_3	t/c		Verified	genomic		348		ggttcccNggccagg
793 IGR3108a_1	ins/w+	GAA repeat or deletion	Verified	genomic		59		ggaaagaNgaagaag
794 IGR3110a_1	a/g		Verified	genomic		199		cttgaggNggttgct
795 IGR3111a_1	t/c		Verified	genomic		72		ttacttgNccagcttcc
796 IGR3112a_1	g/c	G in ref	Not yet verified	genomic		321		aatggatNtatgtcaga
797 IGR3113a_1	a/t	T in ref	Not yet verified	genomic		368		agggacccNaatagttt
798 IGR3113a_2	t/g	T in ref	Not yet verified	genomic		477		attcagaNggtcigt
799 IGR3113a_3	a/g		Verified	genomic		571		cacaagttNtccacagag
800 IGR3114a_1	other/w +	poly t	Verified	genomic		557		gaatgatgcNtttttttt
801 IGR3115a_1	t/c		Verified	genomic		452		cccaaagtNtacccttat
802 IGR3117a_1	t/c	C in ref	Not yet verified	genomic		116		tggcataNagaagtt
803 IGR3118a_1	a/c		Verified	genomic		301		gcclagatcNcttgcttgca
804 IGR3119a_1	a/c		Verified	genomic		534		ggccatggtNtatggcc

806	IGR3121a_1	g/c	G in ref	Not yet verified	genomic	586	agtaactggNaccctgggc
807	IGR3122a_1	t/g	G in ref	Not yet verified	genomic	144	catgttcNactacact
808	IGR3122a_2	a/g		Verified	genomic	441	gtaccagcNgctagtggga
809	IGR3125a_1	del/w+	del of ACTGT from ref	Verified	genomic	3121	aaatgggNactgtctcg
810	IGR3125a_2	a/c	C in ref	Not yet verified	genomic	384	ggcaaacNcaccacg
811	IGR3129a_1	t/c		Verified	genomic	193	ccgtgggaNttggggt
812	IGR3131a_1	t/g		Verified	genomic	1308	tggtgtgNgggtctga
813	IGR3133a_1	a/g		Verified	genomic	2029	tcgggcaNgcatgca
814	IGR3133a_2	t/g		Verified	genomic	2301	ttttagtNtgagtcgc
815	IGR3134a_1	a/g		Verified	genomic	2594	gcctcaNtggatttt
816	IGR3138a_1	a/g		Verified	genomic	508	agctctNccctcag
817	IGR3141a_1	t/c		Verified	genomic	125	gggaagcNggctcggg
818	IGR3145a_1	a/c		Verified	genomic	373	gaaaggaNtgaaatgc
819	IGR3145a_2	a/g		Verified	genomic	420	gcctgcaNcaattgc
820	IGR3145a_3	ins/w+	polymorphic CAAA	Verified	genomic	379	aaaggactgaaaNgccccagagggc
821	IGR3148a_1	t/c		Verified	genomic	1733	ttcacaccNggaaagct
822	IGR3149a_1	a/g		Verified	genomic	2119	aggaaacNttcttct
823	IGR3150a_1	a/g		Verified	genomic	262	ccagagaNgtacagaa
824	IGR3152a_1	t/c		Verified	genomic	1223	gccgggcNgatagcct
825	IGR3153a_1	other/w					
826	IGR3153a_2	+	CA repeat	Verified	genomic	1817	ttgcgtaNacacaca
827	IGR3158a_1	g/c		Verified	genomic	2055	gaactggaNagaagtctc
828	IGR3159a_1	a/c		Verified	genomic	669	gggagacNcctttac
829	IGR3159a_2	ins/w+		Verified	genomic	1004	gtgtgtgNgggggg
830	IGR3161a_1	g/c		Verified	genomic	2042	gctgagaNcctatcat
831	IGR3162a_1	a/g		Verified	genomic	2539	gcctctNiatgcag
832	IGR3162a_2	a/g		Verified	genomic	2686	tgggacaNgaacaac
833	IGR3162a_3	a/g		Verified	genomic	2816	ccctcccNtgaggccc
834	IGR3162a_4	g/c		Verified	genomic	2959	cagccccNtcccc
835	IGR3163a_1	t/c		Verified	genomic	478	gacagliaNagcctgtga
835	IGR3166a_1	a/g		Verified	genomic	325	gctgctatNaggtgcagg

836	IGR3166a_2	other/w +	poly t	Verified	genomic	651	ccatcctcNtttttt
837	IGR3169a_1	a/g		Verified	genomic	40	tgctgccNagtcaggt
838	IGR3169a_2	t/c	t in ref	Not yet verified	genomic	505	aacggagtNtgcctct
839	IGR3170a_1	t/g		Verified	genomic	73	gtgtggaNagttaa
840	IGR3170a_2	t/c		Verified	genomic	191	cagtcctcNgagaagt
841	IGR3171a_1	t/c		Verified	genomic	213	ttctattaanGggagaatcc
842	IGR3173a_1	a/g		Verified	genomic	126	taaatcccaNatggattc
843	IGR3174a_1	a/c		Verified	genomic	489	aataaataNtcatlatt
844	IGR3176a_1	other/w +	poly t	Verified	genomic	107	cccccaaccNttttt
845	IGR3178a_1	a/g		Verified	genomic	310	ggatcatNtttaagag
846	IGR3178a_2	del/w+		Verified	genomic	279	ggaattgtNaatactt
847	IGR3179a_1	t/c	C in ref	Not yet verified	genomic	554	tcctggcNtcaagggga
848	IGR3181a_1	a/g	G in ref	Not yet verified	genomic	257	gggaccaNgcagaaa
849	IGR3182a_1	a/c	C in ref	Not yet verified	genomic	614	acaaaacNcaaacia
850	IGR3182a_2	a/t		Verified	genomic	620	aacacaaacNaaaaacagggccaa
851	IGR3183a_1	t/g		Verified	genomic	131	aaacaggNccaaatgacta
852	IGR3183a_2	other/w +	poly A	Verified	genomic	248	agggaaagNaaaaaaa
853	IGR3185a_1	a/t		Verified	genomic	211	aaacaatcNctacagtt
854	IGR3185a_2	g/c	G in ref	Not yet verified	genomic	558	aaaacatNatacagga
855	IGR3185a_3	a/g	G in ref	Not yet verified	genomic	529	aaaagtNaagtccta
856	IGR3186a_1	other/w +	poly t	Verified	genomic	174	gttgcaaNttttttt
857	IGR3186a_2	g/c		Not yet verified	genomic	58	aaaacatNatacagg
858	IGR3188a_1	a/g		Verified	genomic	152	gcactaNccaaaatat
859	IGR3188a_2	a/g	A in ref	Not yet verified	genomic	508	aacaataNcaaatgtt

		a/g	G in ref	Not yet verified	genomic		139	acctaggNatttcactcc
		t/c		Verified	genomic		394	gaaagaaNatataftgt
			A in ref	Not yet verified	genomic		429	gttcaaNatctgac
		a/g		Verified	genomic		215	ccccgcNacctcactt
		t/c		Verified	genomic		246	cacttagNctttatc
		t/c		Verified	genomic		328	gggagaNccacacct
		a/g		Verified	genomic		409	gagacaNgagagga
		t/c	C in ref	Not yet verified	genomic		296	aaaggatNtggggtctt
		t/c		Verified	genomic		137	cacacgtNgcgtatgca
		other/w +	tg repeat	Verified	genomic		177	gcatalaaaNgltgttgt
		other/w +	poly t	Verified	genomic		308	tggtgtgaNttttttt
		other/w +	poly a	Verified	genomic		131	tgagtctcNaaaaaaa
		a/g		Verified	genomic		342	ctccaccNttgttccc
		a/t	A in ref	Not yet verified	genomic		234	aggactNatctcta
		a/g		Verified	genomic		538	ctgtctcNaggagcca
		t/g		Verified	genomic		1035	taatggaNtaaggat
		a/g		Not yet verified	genomic		548	cacatggttNcaatgtcac
		t/c		Verified	genomic		1176	aagatctcNaggggtggg
		g/c		Verified	genomic		1511	gacaggNatgtcttat
		g/c		Verified	genomic		552	gagacaggNatgttctat
		t/c		Verified	genomic		205	aaaaaaccttNggtgtct
		a/t		Not yet verified	genomic		206	ctgccctggNttaacctggg
		other/w +	Poly T	Verified	genomic		59	ttttgtgtgtgtggNtttttt
		a/c		Not yet verified	genomic		594	gccacatNtgtcatca
		t/g		Verified	genomic		462	agagacacacctgggNagagatgtcg

genetic data, such as sequencing data, is not available for this gene and thus the full length of the gene is not known.

885	IGR3230a_2	a/g		Not yet verified	genomic	491	cccacttccaaccNtgtctgg
886	IGR3236a_1	t/g		Not yet verified	genomic	320	gagaggNtgtatgt
887	IGR3238a_1	g/c	G in ref	Not yet verified	genomic	280	gggccagNgcaagtt
888	IGR3242a_1	a/g		Not yet verified	genomic	319	aacctaNggggagggg
889	IGR3244a_1	ins/w+		Not yet verified	genomic	91	tccgcNtgtgtct
890	IGR3248a_1	t/c		Not yet verified	genomic	395	actgtcNccaactt
891	IGR3252a_1	other/w +	poly T	Not yet verified	genomic	183	tctaccNtttttt
892	IGR3252a_2	t/g		Verified	genomic	136	gtgtgtNggactgaa
893	IGR3266a_1	a/g		Not yet verified	genomic	156	cagggtgNtgttcttg
894	IGR3266a_2	a/g		Verified	genomic	185	ccactgggNcccggcctt
895	IGR3268a_1	t/c		Not yet verified	genomic	367	tgttgtaNtctctcc
896	IGR3268a_2	t/c		Not yet verified	genomic	385	aggaactgNctcgacat
897	IGR3274a_1	a/g		Verified	genomic	126	cttctaggaNcatttcag
898	IGR3274a_2	a/g		Verified	genomic	284	tgagaaNcagtggaagc
899	IGR3276a_1	other/w +	poly t	Verified	genomic	340	cttctctcNttttttttt
900	IGR3276a_2	ins/w+	ins G	Verified	genomic	221	tttctgtcgtNtgttttgg
901	IGR3278a_1	other/w +	poly t	Verified	genomic	69	cttctttatcNttttttttt
902	IGR3292a_1	other/w +	poly t	Verified	genomic	518	ttcatctcNtttttttttt
903	IGR3294a_1	t/c	T in ref	Verified	genomic	366	aatttatctcttcttcaagaaNttgaatttttgaatct
904	IGR3298a_1	a/g		Not yet verified	genomic	76	gttcctccgNttttccac
905	IGR3300a_2	g/c		Verified	genomic	366	ccgagaggcatcaaaNicaaatatgatcaa
906	IGR3302a_1	a/g		Verified	genomic	218	catctcatgttatcNgtcacctgattggg

907	IGR3304a_1	ins/w+		Verified	genomic	319	tttggagggtgaggTgggNggatcaggaggTca ggag
908	IGR3310a_1	a/g		Not yet verified	genomic	361	ggaccaaNctggggTg
909	IGR3310a_4	other/w +	poly a	Not yet verified	genomic	86	aaaaaaaaNgtttcccc cagataagcatcagattTgNaaactacaatggga atg
910	IGR3312a_1	ins/w+		Verified	genomic	249	
911	IGR3324a_1	t/c		Not yet verified	genomic	388	tattgtattccaattNtggatgtagccacca
912	IGR3326a_1	other/w +	tg repeat	Verified	genomic	261	tattcctagtctgtggagaggNttttgtttgtttgttg
913	IGR3326a_3	t/g		Verified	genomic	295	ttgtttNtttagacagatctca
914	IGR3328a_1	t/c		Verified	genomic	586	tatatTTtagttttcatNgtgaattctctttgacc
915	IGR3330a_1	other/w +	poly t	Verified	genomic	200	tacctcNttttt
916	IGR3330a_2	other/w +	poly t	Verified	genomic	512	tttttttNaaccttaaa
917	IGR3332a_1	other/w +	Poly A	Verified	genomic	347	catctcNaaaaaa
918	IGR3336a_2	other/w +	poly a	Verified	genomic	467	aaaaaaaaNgagagag
919	IGR3340a_1	a/g		Not yet verified	genomic	524	agactaNcacagaaa
920	IGR3348a_1	t/c	T in reference	Verified	genomic	91	ccacatNctctcc
921	IGR3348a_2	a/g	A in reference	Verified	genomic	202	gatggNagcatt
922	IGR3348a_3	a/g	A in reference	Verified	genomic	216	tttcatNigttt
923	IGR3348a_5	t/c		Verified	genomic	129	aatgatNgccatt
924	IGR3348a_6	a/g		Verified	genomic	264	gttcatNiccTtg
925	IGR3348a_8	a/g	A in ref	Verified	genomic	618	gatttttNataagg
926	IGR3348a_9	a/g		Not yet verified	genomic	584	tctaacNtttaag
927	IGR3350a_1	g/c	G in Reference	Verified	genomic	77	catgagNatggaa
928	IGR3350a_10	a/g		Not yet verified	genomic	451	cctgcctNattgcc
929	IGR3350a_11	t/c	C in reference	Verified	genomic	450	cctgccNaattgccc

930	IGR3350a_2	t/c	T in Reference	Verified	genomic	88	gaatgttNttccatt
931	IGR3350a_3	g/c	G in reference	Verified	genomic	236	gatttgNtctcig
932	IGR3350a_4	t/c	C in reference	Verified	genomic	247	tgtttgNctgttg
933	IGR3350a_7	t/c	C in reference	Verified	genomic	321	agttgcNtalcag
934	IGR3350a_8	g/c	C in reference	Verified	genomic	349	ggctgaNacaaig
935	IGR3352a_1	a/g	A in reference	Verified	genomic	282	gggatacNgtggig
936	IGR3352a_2	t/c	T in reference	Verified	genomic	314	ttatigNgtctat
937	IGR3352a_3	t/c	T in reference	Verified	genomic	330	atcttNtctctt
938	IGR3352a_4	a/g		Not yet verified	genomic	177	tgggagNgtgtat
939	IGR3352a_5	t/c	T on reference	Not yet verified	genomic	339	tcctttNttcttt
940	IGR3352a_6	a/g	G in ref	Verified	genomic	547	gtgtcaNttttgga
941	IGR3370a_1	other/w +	poly t	Verified	genomic	354	cttttcNttttttt
942	IGR3370a_2	t/c		Verified	genomic	378	agacagNctgtctc
943	IGR3374a_1	a/t		Verified	genomic	193	ggctatNgaaaaa
944	IGR3378a_1	a/t		Verified	genomic	418	gctggaNcataaag
945	IGR3378a_2	a/t		Verified	genomic	563	cttttNaaaaatagg
946	IGR3388a_1	a/t		Not yet verified	genomic	48	aatctttaNaglacatt
947	IGR3388a_2	other/w +		Not yet verified	genomic	441	gttgaatacNttttttttt
948	IGR3394a_1	t/c		Not yet verified	genomic	493	ccctacaNgtaaat
949	IGR3406a_1	t/c		Not yet verified	genomic	158	aaatataNacatttat
950	IGR3420a_1	a/g		Not yet verified	genomic	322	cgccttcNalaaaa
951	IGR3428a_2	a/g	A in ref	Not yet verified	genomic	278	tataaggNtaagg
952	IGR3454a_1	t/c		Not yet verified	genomic	382	tcccattNttagggt
953	IGR3454a_2	t/c		Not yet verified	genomic	450	aattagaNcccattt

954	IGR3456a_1	a/g	G in Reference	Not yet verified	genomic	42	tctccNtttgtt
955	IGR3456a_2	a/t	T in Reference	Not yet verified	genomic	81	gtggtnGtagtt
956	IGR3456a_3	t/c	T in reference	Not yet verified	genomic	108	cctcaNgtccct
957	IGR3456a_4	a/g	G in Reference	Not yet verified	genomic	109	cttcatNtccctt
958	IGR3456a_5	t/g	T in reference	Not yet verified	genomic	178	actcatNgttgg
959	IGR3456a_6	a/g	G in Reference	Not yet verified	genomic	179	ctcatNtttggc
960	IGR3456a_7	other/w +	Poly T	Not yet verified	genomic	204	ctctctcNtttttt
961	IGR3456a_9	a/g		Not yet verified	genomic	398	catgtcNcctgcaaa
962	IGR3460a_1	g/c	C in Reference	Not yet verified	genomic	118	tttgtNgcagag
963	IGR3462a_1	other/w +	poly t	Not yet verified	genomic	419	ttttttNgctcatca
964	IGR3466a_1	a/g		Not yet verified	genomic	185	gcclcatgNacccctaac
965	IGR3466a_2	g/c		Not yet verified	genomic	503	ctcacaaaNgctccagt
966	IGR3470a_1	a/t		Not yet verified	genomic	199	gctggaggNaggactag
967	IGR3470a_2	t/c		Not yet verified	genomic	438	gtcaaatNattcattt
968	IGR3470a_3	a/t		Not yet verified	genomic	178	tccagctgaNgatgcagg
969	IGR3470a_4	a/t		Not yet verified	genomic	214	agccctgaNtgggcacca
970	IGR3475a_1	a/c		Verified	genomic	483	caccctgctNtataact
971	IGR3475a_2	t/c		Verified	genomic	490	ctatacaNtggttgg
972	IGR3477a_1	t/g		Verified	genomic	468	ccaggtaagNtgcigagt
973	IGR3479a_1	a/g		Verified	genomic	178	tagtgggNagtctgggc



bioRxiv preprint doi: <https://doi.org/10.1101/2025.10.25.1025002>; this version posted October 25, 2025. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

974	IGR3479a_2	a/t		Not yet verified	genomic	229		ogtaccanNtagtaat
975	IGR3481a_1	a/t		Not yet verified	genomic	139		ctggaggagNctggggact
976	IGR3483a_1	a/g		Verified	genomic	539		gtgatgggNtgccttaag
977	IGR3483a_2	t/g		Verified	genomic	495		atctggtaaNaggtgtgg
978	IGR3483a_3	a/c		Not yet verified	genomic	135		gaaacaggNgcggtggca
979	IGR3485a_1	a/g		Verified	genomic	198		ctctgaaggNtcatcacag
980	IGR3487a_1	a/t		Not yet verified	genomic	184		ctctcaagcNcctgctagta
981	IGR3493a_1	a/c		Not yet verified	genomic	434		ctcttattaNtcccttccca
982	IGR3493a_2	t/c		Verified	genomic	517		gatgaagganlggggtcatgc
983	IGR3493a_3	a/g		Not yet verified	genomic	534		tgctaccaNgtgagcca
984	IGR3493a_4	g/c		Not yet verified	genomic	542		aggtagccaNcaggatgag
985	IGR3495a_1	a/g		Not yet verified	genomic	195		tcacaacaaagctctcag
986	IGR3499a_1	t/c		Verified	genomic	467		aggggtggacigtNactgttct
987	IGR3501a_1	other/w + poly T		Not yet verified	genomic	503		ttcatgaaagacNttttttttttg
988	IGR3505a_1	t/c		Verified	genomic	213		tgccctctcNgggcttgggg
989	IGR3515a_1	a/g		Verified	genomic	604		agtgtgggatgNaacciccagc
990	IGR3515a_2	t/g		Not yet verified	genomic	440		ctcctccgNccagggtga
991	IGR3519a_1	t/c		Verified	genomic	230		tttctccctNcccgtccca
992	IGR3523a_1	t/c	T in ref	Verified	genomic	193		cacggccagNagcctctg
993	IGR3525a_1	t/g		Verified	genomic	322		ttcagaggggtgNggtgggtcaagt
994	IGR3527a_1	t/c		Verified	genomic	87		cactgtgNctgagtctg
995	IGR3529a_1	a/g		Verified	genomic	251		catgtacaggNgacagatctgg
996	IGR3529a_2	t/c		Verified	genomic	120		aagtgtctNtgaatgta
997	IGR3531a_1	t/c		Not yet verified	genomic	361		tcaacccctgNactgtacaa
998	IGR3533a_1	a/g		Verified	genomic	137		cacagggagNgittgaga

999	IGR3535a_1	g/c		Not yet verified	genomic	462		cttgtcttNgtggggagga
###	IGR3535a_2	a/t		Not yet verified	genomic	363		tcgagcctgNctgatggcaaa
###	IGR3537a_1	a/g		Verified	genomic	426		ggagggttagNgcagaagtt
###	IGR3551a_1	a/c		Not yet verified	genomic	403		ggccatccaNcagaaac
###	IGR3553a_2	a/g		Verified	genomic	125		tccccacNctgatcac
###	IGR3553a_3	t/c		Verified	genomic	426		gaattgacctaNggagtacgc
###	IGR3555a_1	t/c		Verified	genomic	188		actgcagcctNgacctccca
###	IGR3563a_1	a/g		Verified	genomic	655		ttccgggtcaNaglacct
###	IGRX100a_1	a/g		Not yet verified	genomic	142		accggtNataattc
###	IGRX320a_1	t/c		Not yet verified	genomic	383		tctaaactNgggggaaa
###	IGRX320a_2	other/w +	poly t	Not yet verified	genomic	393		ggggaaacNttttt
###	IGRX460a_1	other/w +	poly t	Not yet verified	genomic	292		ttttttNgagatgga
###	IGRX610a_1	t/c		Not yet verified	genomic	684		attcctgNgttgcct
###	IGRX610a_2	a/g		Not yet verified	genomic	827		tttgctcNgctgcct
###	IGRX650a_1	a/g		Not yet verified	genomic	344		atcagggtNagtttta
###	IGRX660a_1	a/g		Not yet verified	genomic	203		tctagtgaNgacacccag
###	IGRX665a_1	other/w +	poly A	Not yet verified	genomic	309		acagatcttNaaaaaa
###	IL13_5240	a/g		Verified	gene	n/a	Interleukin 13	aaacttttcgcgaggggacNgttcaactgaaactc gaaagcatcat
###	IL13_5710	a/g		Verified	gene	n/a	Interleukin 13	ttggggaagacgtgtggcgtNgcacttggagcca agggttcaga
###	IL13_5770	a/c		Verified	gene	n/a	Interleukin 13	agcactaaagcagtggaNcccaggagtccttggt aataagt
###	IL13_5940	c/t		Verified	gene	n/a	Interleukin 13	cgagtaattatgtttttcttNgtatttaaaataaata tgtt

###	IL3_4400	c/t		Verified	gene	n/a	Interleukin 3	ccaagctccatgaccagacaacgNcctgaag acaagctgggttaactgtctaactga
###	IL4ex1_2495	c/t		Verified	gene	n/a	Interleukin 4	tcgttagctctcgtgataaactaatgNctcacattgt cactgcaaatgcacacct
###	IL4pro_1940	c/t		Verified	gene	n/a	Interleukin 4	acacctaacttgggagacaattgtNccccagtg tgggtaggaga
###	IL5pro3	c/t		Verified	gene	n/a	Interleukin 5	tgctatgaacagaatacataNagatcaggaggt ctggacatcatc
###	IL9_4616	a/g		Verified	gene	n/a	Interleukin 9	tgtaatggtgatgccaaacctgtttgaacNcaaa aggatgataaagttggaattggta
###	IL9_4616	a/g		Verified	gene	n/a	Interleukin 9	gtgaatggtgatgccaaacctgtttgaacNcaaaa ggatgataaagttggaattgg
###	IL9_6085	c/t		Verified	gene	n/a	Interleukin 9	ttcctgtgaacagccatgcaaccaaacaNggca ggcaacgcgtgacat
###	IL9_6085	c/t		Verified	gene	n/a	Interleukin 9	ccctgtgaacagccatgcaaccaaacaNggcag gcaacgcgtgacat
###	IRF1ex1_1	g/c		Verified	gene	n/a	Interferon regulatory factor 1	aagacgtgcgccgagccccgcgaaNcgagg ccacccggagccgtgccagt
###	IRF1pro1_2	c/t		Verified	gene	n/a	Interferon regulatory factor 1	cacggggcagggtaggcttctgcttNcttcacttc cccagggcagggtgagt
###	IRFex6_1	t/c		Verified	gene	n/a	Interferon regulatory factor 1	ctgacctgtggggtcnccctgccagacct
###	IRFex9_1	t/g		Verified	gene	n/a	Interferon regulatory factor 1	gccactccgactnctcaagagctg
###	IRFex9_2	t/g		Verified	gene	n/a	Interferon regulatory factor 1	tccatccacgttnttggctgccactc
###	IRFpro1_1	a/g		Verified	gene	n/a	Interferon regulatory factor 1	gtagggtatattattttatggtt
###	IRFpro1_2	t/c		Verified	gene	n/a	Interferon regulatory factor 1	ggggcagggtaggcttctgcttNcttcactcccc agggcagggtgagt
###	OCTex5_1	a/g		Verified	gene	n/a	carnitine transporter (organic cation transporter) 1	gaatcaaatatcacigctgggtacagctNtgtgttca tttttcagcttttggga
###	OCTN1ex1_1	g/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 1	gctgttagaaattggggcgcgaaNccgggggacc gttcctgggaaaca

###	OCTN1ex3_1	t/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 1	gccctgagtcaggcatcaatgcagaNttagtgtttt tcagggtctggcag
###	OCTN1ex6_1	t/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 1	ggatatctgcatttcaggctcacttattaNttaccata gcagcaagacataatgg
###	OCTN1ex6_2	t/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 1	cttatgcatgcaactctcacttcaccttgac
###	OCTN1ex9_1	a/g		Verified	gene	n/a	carnitine transporter (organic cation transporter) 1	ctcagtcatgtgacagatgttcctcttgNtagagttc ttgcctaccagattctc
###	OCTN2ex1_1	a/g		Verified	gene	n/a	carnitine transporter (organic cation transporter) 2	gtcgcgccccggctccagccccNagcgcgagaa gtggcgatgg
###	OCTN2ex3_1	t/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 2	accctgtccccttgaggacatcacagNtgtctcc agaaaggtaggtgatg
###	OCTN2ex3_2	a/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 2	tctcgggtctcacagtgcacatgcta
###	OCTN2ex4_1	a/g		Verified	gene	n/a	carnitine transporter (organic cation transporter) 2	gccagtgggcacatggggcacaNggtcacactc accaccaga
###	OCTN2ex4_2	t/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 2	actcaccaccagagtgccacgcgaNagcaccccc ggcatcgtcagcgcc
###	OCTN2ex6_1	t/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 2	aacttccctaggcctgttcagtaaNaaatcagagtg aatgaaaaatgagga
###	OCTN2ex6_2	t/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 2	tatccttttcactctctgatgacaNaggctttgaatttg tctgagggc
###	OCTN2ex7_1	g/c		Verified	gene	n/a	carnitine transporter (organic cation transporter) 2	gcaagttaggagtatcaagcgaaaNccaaaata gcccactgatatgtc

###	Polyex3_1	t/g		Verified	gene	n/a	Prolyl 4 hydroxylase	gcctataagaggaaccccttgagaggNlgatgtgg ggctggcctgggttactctatg
###	Polyex6_1	t/c		Verified	gene	n/a	Prolyl 4 hydroxylase	ctatccagtggtctcaggcttctctgaagNgggaat ctcttccctaatcca
###	Rad50ex16_1	ins/del other/w	ins/del caa	Verified	gene	n/a	RAD50	tcctctgtatNaaagactgaa
###	Rad50ex16_2	+ ins/del	ta repeat ins/del t	Verified	gene	n/a	RAD50	agactgtctcNaaaaataaaa
###	Rad50ex16_3	other/w		Verified	gene	n/a	RAD50	ttaaaataatttNacaaaaaacat
###	Rad50ex25a_1	+ t/c	ca repeat	Verified	gene	n/a	RAD50	atttaggaNcccccccc
###	Rad50ex4_1	t/c		Verified	gene	n/a	RAD50	cccttctgcttttaaaNttttctgttaaaaag
###	Rad50ex4_2	t/c		Verified	gene	n/a	RAD50	ttaatggactacaaagNtatttaagggttaca
###	Rad50ex7_1	a/t		Verified	gene	n/a	RAD50	gagattcttcatcaNacagaaaaatgataacat
###	Sept2ex10b_1	a/g		Verified	gene	n/a	Septin-like	ttctaaatattttttgNcaccagcgctcaagacaa
###	Sept2ex10c_1	a/g		Verified	gene	n/a	Septin-like	attaagactcccaagcNaatcctgcataattccaa
###	Sept2ex10d_1	t/c		Verified	gene	n/a	Septin-like	gtgtgtgtccacNgaggcacgg
###	Sept2ex10f_1	a/g		Verified	gene	n/a	Septin-like	tccctgttaagNgggctcatgga
###	Sept2ex2_1	g/c		Not yet verified	gene	n/a	Septin-like	tgtcagggcctgNcctcagaca
###	Sept2ex3_1	t/c		Verified	gene	n/a	Septin-like	cccagacctaNacctccagga
###	TCF_1625	c/t		Verified	gene	n/a	t cell transcription factor 1	cactttgctgcagggtgccccgaaaggacNtggg ggataaaattcaaaaaaagtgtgat

Table 4. Summary of best SNPs in chromosome 5 region.

	SNP marker name	Approxim ate Physical position <sup>1</sup>	SNP type	Tran smitt ed allel e	Frequen cy of allele <sup>2</sup>	Trans mitted	Untra nsmitt ed	C <sup>2</sup>	p-value
5	IGR2055 a 1	435.0	G/T	G	0.357	87	39	18.29	0.000019
	IGR2060 a 1	437.5	C/G	C	0.351	81	34	19.21	0.000012
10	IGR2063 b 1	439.0	C/G	G	0.359	87	37	20.16	0.000007
	IGR2069 a 2	442.0	C/T	T	0.627	52	20	14.22	0.00016
	IGR2078 a 1	446.5	A/G	A	0.364	48	16	16.00	0.000063
15	IGR2096 a 1	455.5	A/C	A	0.349	75	32	17.28	0.000032
	IGR2198 a 1	506.5	C/G	G	0.364	87	41	16.53	0.000048
20	IGR2230 a 1	522.5	C/T	T	0.415	67	28	16.01	0.000063
	IGR2277 a 1	546.0	A/G	G	0.417	79	37	15.21	0.000096
	IGR3081 a 1	609.0	G/T	G	0.338	79	35	16.98	0.000038
25	IGR3096 a 1	616.5	C/T	C	0.429	89	42	16.86	0.00004
	PROLYL ex3 1	686.5	G/T	T	0.383	79	39	13.56	0.00023

<sup>1</sup> Position (kb) on the 850 kb reference sequence.

30 <sup>2</sup> Frequency of allele calculated from the untransmitted parental chromosomes.

TABLE 5

>IGR2001a  
ggcccgaaaggactgtgccccctccccgtcaaacacccccccccgcgtccccaccaag  
ttctggccggggctgtggagcgtgggtcacctggggggcgaaggactccacatcacggtga  
agtggaggtgctgcagccccacaaagcccgagaagcctgccaggggcgccccggcgaa  
cggcagtgggcgtgggcccgttctgcagcaccattggcgcgggggaggagagtgtgatc  
ccatcaagccccgtccaggtcgcggccgctgggcctggcccaggagcctccccggcct  
cggggccccatgggactgacagggggctgagttcttctctccaacggcggtgttat  
aagaaatgaagctccgcagcggccatcagcggcagcccacactgtcacccgccccgctc  
tcagggggttccggaacagccctgagcactggagcaattccttggtcagtattctatca  
tgacccttagtgattttccagccagcttcagccccacattctgcatttaggaatttat  
aacagtgaacgtttattctgtgtgtcatcacagcatatttgcacacctttgagaggg  
gaggggctggtctggtgccccagtgatctccagaaccaaactgggggtcaccaaaaag  
caggcctgcgtgattcatatgtgtgaatgaattaaggga

>IGR2002a  
cagccagcttcagccccacattctgcatttaggaattttataacagtgaacgtttattc  
tgctgtgtcatcacagcatatttgcacacctttgagaggggaggggctggtctggtgcc  
ccagtgtatctccagaaccaaactgggggtcaccaaaaagcaggcctgcgtgattcata  
tgtgtgaatgaattaagggactttcttctcctcagttaggctccttcaggcagggtg  
atgaccttggtattctgcctcaagcttttgatgtctttattctggcttgtgtctgc  
aattcacagtttaggactgcctgcctccaggttctgtgaaaatcgagatgaaggattt  
gagcatttcagagagccctactacttctggacctggaacctggaaggcatgctggggagt  
ttgtctgctttggggaccgtggccccctctctgggtagcaggctccacaggtagcaggtc  
tccagtcgaaaacctagttcaggtcgggcgccgtggctcatgcctataatcccagcact  
ttgggaggccgagggcgtggtacacctgaggtcaggagtggagaacagcctggccaatg  
tggtgaaactccatctccacaaaatacaaaaattagctgggcatggtggcgggtgcct  
gtaatcccagctacttgggaggctgaggcaggagaattgc

>IGR2003a  
tcaggctcgggcgccgtggctcatgcctataatcccagcactttgggaggccgaggcgggtg  
gatcacctgaggtcaggagttggagaacagcctggccaatgtggtgaaactccatctcca  
ccaaaaatacaaaaattagctgggcatggtggcgggtgcctgtaatcccagctacttggg  
aggctgaggcaggagaattgctgaacccctggaggtagaggttcagtgagccgagatca  
cgtcactgcactccagcctgggtgacagagcgagactccgtctcaaaaaacaaaacaaa  
aaaacacctagttaaacctcactggcacctgcacctcagctctcacaactctcatttc  
tgagcacacactcatctctatcagcagaggatttaaccacaggttgccaagaaatgtctg  
tatctgagagaaltcataatctgagatagaaggaacactaaactccagaggaagaggggt  
cacacatcaacttaactaggatttactgagtgctaccatggtagccactcttcggggga  
gtgcaaggatggcggcatcaccttagtggtccgtgtggccctgtgcattgatgtgtgt  
gtgcatggtgacatgttgggagccatgcttctgggcttcaggactaaactgcagcccactt  
aggggggtgaacagtgtttgagagcctgagggaggggact

>IGR2004a

gatttactgagtgccatccatggtagccactcttcgggggagtgcaaggatggcggcatc  
accttagtggtgccgtgtggccctgtgcattgatgtgtgtgcatggtgacatgttg  
gagccatgcttctgggcttcaggactaactgcagcccacttaggggggtaacagtgttt  
gagagcctgagggaggggactggggacaagaattgtctgtcagggtagaggctcccacag  
ggtgtgtgaatgtgtgtgagatgatcttgccttcagcatcctgattgcagaagtcact  
tcaaaggagcccctgccagccagttagcctcctcttgccagcacagaaaaatccaggctc  
caatacagagagggccacacaatgaattcacccctcattgagttaggctatggatgagaggc  
atctgtaaggaagacctgcacagtgcagggtgctggctaccctcagctaacccctagct  
cgcttcagctgctgggcatgaggaaacctgcttagatttctcacagaaacatggagagtt  
cttttctcacagaaaaatgtagagtttgtcccagagtttgtcccaccatgtagaa  
agtgaccagtggtaaaaggaacataggaaagttaaggaccaaaagggtccaaggaggga  
aaagaaaggacttctggttggtgctttgcgggcatttg

>IGR2005a

gaggaacctgcttagatttctcacagaaacatggagagttcttttctcacagaaaaa  
tgtagagtttgttcccagagtttgttcccaccatgtagaaagtaccagtggtgaaaag  
gaaacataggaaaagtaaggaccaaaagggtccaaggagggaaaaagaaaggacttctggt  
ggtgctttgcgggcatttgaagagatcaggcatatgctctgggccttaaaaaagaca  
cagagattgaagtgggtggggtgggcaaggagagagagatggagagagggtgagtgttgc  
caagtatcctgaggagacaggatgaggggacaaacacattgtgttcagataatggaat  
acagtgaagggtcatgcgttcctgttcatacatttcatttgacttatgtcttacagttt  
ggaaataattttgatagtctaattttacaattaggagagatggagagagattatctctat  
tttacagatgagaaaactgagccccagagaggacagtaacttgctaagatcacatagca  
agtggaaaaagcacataagaacccaggctttcagactcaaactcgtgttctctttca  
tcccccttagtttcatcttctactgccaagggttagggaagctgtcagggacagaagg  
ttggaatgggacccagagacaagactgagcagagattga

>IGR2006a

agccccagagagggacagtaacttgctaagatcacatagcaagtggaaaaagcacataa  
gaaccaggctttcagactcaaactcgtgttctcttttcatcccccttagtttcatct  
ttcctactgccaagggttagggaagctgtcaggggacagaaggttggaatgggacccagga  
caagactgagcagagatttgaatgtgggctgaatgtaggggagctcagaaggctcctgg  
gtggccccgagtgttagggagatcatccgagttaggagatcattccagtgcagaggcac  
catcttccccatctacctgggcaaggagggcccaaggggaggttggggcaacaata  
gtctggtcctggactatgaaatcacacccgatacagggaaggaagaccagaagaccag  
gtgggaaagaaaagggtggctccgaattaataagagcctacaggagcctatgtgttctg  
ctggggatcacagaatgttctacatcttagaatgtgattcatcaaagccattacaataa  
aaatgttgggtacttaacatggcttagctttatttctactgatttgagtatagcacc  
tagtcataataagcatattcttacaggcttcaaaataaagtaagaatccctaagggttaa  
aaaaaaaaaagggtcaagatgtaaatgtaaatgacagtt

>IGR2007a

ctacatcttagaatgtgattcatcaaagccattacaataaaaatgttgggtacttaaac  
atggcttagctttatttctactgatttgagtagtagcaccctagtcataataagcatatt

gaggaacctgcttagatttctcacagaaacatggagagttcttttctcacagaaaaa  
tgtagagtttgttcccagagtttgttcccaccatgtagaaagtaccagtggtgaaaag  
gaaacataggaaaagtaaggaccaaaagggtccaaggagggaaaaagaaaggacttctggt  
ggtgctttgcgggcatttgaagagatcaggcatatgctctgggccttaaaaaagaca  
cagagattgaagtgggtggggtgggcaaggagagagagatggagagagggtgagtgttgc  
caagtatcctgaggagacaggatgaggggacaaacacattgtgttcagataatggaat  
acagtgaagggtcatgcgttcctgttcatacatttcatttgacttatgtcttacagttt  
ggaaataattttgatagtctaattttacaattaggagagatggagagagattatctctat  
tttacagatgagaaaactgagccccagagaggacagtaacttgctaagatcacatagca  
agtggaaaaagcacataagaacccaggctttcagactcaaactcgtgttctctttca  
tcccccttagtttcatcttctactgccaagggttagggaagctgtcagggacagaagg  
ttggaatgggacccagagacaagactgagcagagattga



cttacaggcttcaaaataaagtaagaatccctaagggttaaaaaaaaaaaaaagggtcaaag  
atgtaaatgtaaatgacagtttcattggtaaatcctaactggggaatttctcctaagcaa  
aaaattattgatatgcacaaagatttagctaatagtgtgtgtgtattacgaaaaatgg  
aaataacctaactgtcctacaataggggattaattgggtaaattttatttatccttggtg  
aaagaataatgtatacctattacaaatgacattgcataagtacattcatgacatggaaa  
gatgctcattatggctaaatatacatatgcataacgggtatattatacctgtatctgt  
gaattaaaattaagttttgttttaagcatttttatagtgcctgttccttcacagg  
gtcactgtggcaacttatcagaccacaaagatgcaaacttcctttccctaatactcatcc  
tgaattttccagtggtgtgtcaggttctcagggaaggacaagcatctatttctgttac  
caagaaaggatcccacgactcaggggtcactgttttctc

>IGR2008a

gttttaagcattttttatagtgtcctgttgcccttcacagggtcactgtgggtcaacttat  
cagaccacaaagatgcaaacttcctttccctaatactcatcctgaattttccagtggtatgt  
gtcaggttctcaggggaaggacaagcatctatttctgtaccaagaaaggatcccacgac  
tcaggggtcactgttttcttattctgtcagaaggtcttggtccctgtagcaagtc  
cccacttccattgtcacttaaaagtaccccaaaacccacctttccattccagagtgtcat  
tgccctccactttgcttaacactcagtttaggttccttctcagtttctcctacctccttt  
cctctcctagctcctgaccacctctatctggttagacagttttgccattcctgtctggtta  
tcctgggaaccaggtttggcattgggtcacagcactcagattgcaatgcgccagaatggga  
ttaaccatgcatctcctctacgggagggaggtagagtactggcaagtcgaatgttgca  
tgggtgtgtctattatagcctgcaaaatgggggtgctgccctggaggagagctgcgggtg  
aaggaaatgacacgcctgggagagtaacttacttctgcaggagctctaggagatgaagg  
aagaagcctcctgggccagagttttggatggaaatgaac

>IGR2009a

tacgggagggaggtagagtactggcaagtcgaatgttgcattgggtgtgtctatttatag  
cctgcaaaatgggggtgctgccctggaggagagctgcgggtgaaggaaatgacacgcctgg  
gagagtaacttacttctgcaggagctctaggagatgaaggaaagaagcctcctgggccag  
agttttggtggaatgaacaccagtcgaagtctctaggactatacgtggggcggggac  
tagttgtgcgcgagagtttaagtaggggcccttaccaaggagcatgggacctgggctcccc  
aaccttttggttagccccatggcggtgatcagccctgagctaattcctccatgctgcccc  
gaacctctctgggccaaagccctggggactcagagatgacagcaatgcttccattgcggaa  
ctcccatagcggggccacaggaggtctggaggcgccctgaggcaagagtgttaggagg  
gatcagagctagcccaccctaccctcactcagccgtctgggcttctgaaccccttct  
cctcctctgttccctaaagccagccagggggagtcccaggggagcagaccgaaagggtg  
gggggtgcatcctgggtcactattagacctgcaacggcgaccttgaactactcagcgt  
ctgttggccgagtgagcatagtgctttacaatctctcc

>IGR2010a

ctacctcactcagccgtctgggcttctctgaaccccttctcctcctctgttccctaaag  
ccagccagggggagtcccaggagcagaccgaaaagggtgggggtgtcatcctgggtcac  
tattagaccctgcaacggcgaccttgaactactcagcgtctgttggccgagtgagca  
tagtgctttacaatctcttccatcacagcaaacatcaaggtagggtactgttattt  
atggttgaaaaacagaggtcctgcgtcccttgggggtgtgccagcagcgccaagtgg

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

gatttccccctgggtccagcagccccagacagcacacggggcagggtaggctttctgcctcc  
ttcacttccccagggcaggtgagtgacctggaggagggggtcacccctaaaaacagggg  
tagtgctaggactgaaacctcccttctgatatcccactggcaagcttgaggagccagg  
ctgccagtcgggagattcggccagtggtccactggagagggcggcaagtggccggcg  
atcacctcgctgcgttcgggagatatactccgccccgccccgccaggagggtgaaaa  
gatggccccaggagccagccggctgggacaaggcggagtgagaggacaggctggggccgg  
gggcgctgggctgtccgggcagccctcctccgggaagc

>IGR2011a

gcccagtggtccactggagaggcgggcaagtggccggcgatcacctcgctgcgttcg  
ggagatatactccgccccgccccgccaggagggtgaaaagatggccccaggagccagc  
cggctgggacaaggcggagtgagaggacaggctggggccggggcgctgggctgtccgg  
gcagccctcctccgggcaagccggagcaggggtggattgggagcgctcggggcgggccc  
cggtggccccggggcggtggcgccggcgagagggtggggcgagcagccgcctgta  
cttccccctcgccgctagctctacaacagcctgatttccccgaaatgacggcacgcagcc  
ggccaatgggcgcccgcgcggctgtccggggcgggggccggccagggtggggaatcccg  
ctaagtgtttggattgtcgggtggcgccgctgccctggcagagctcggcactccttagtc  
gaggcaagacgtgcgccgagccccgccgaaccgaggccacccggagccgtgcccagttc  
acggcgccgtgcccggcgcccttaagaacccggcaacctctgccttcttcccttcca  
ctcggagtcgcgctccgcgcgcctcactgcagccctgcgtcgccgggacccctgcgcg  
cgaccgccgaatcgctcctgcagcagaggtgagtacgcct

>IGR2012a

agccccgccgaaccgagggccacccggagccgtgcccagtcacgccggcgtgcccggcg  
gccttaagaacccggcaacctctgccttcttcccttcttccactcggagtcgcgctccgcg  
cgccctcactgcagccctgcgtcgccgggacccctgcgcgcgaccgccgaatcgctcct  
gcagcagaggtgagtagcctttgaggcgcggggcaccggcggtcgaataaaaggcgc  
gcggggcaccagggaagtggggggtcgaaagctccaggtggagactcgcggcgcgcgggc  
gttccccgggctccgcgcgggtccggggggcgccggaggagctgcgagccgcgggccc  
cggcgcggggaggggcgggacgcggcggtggaccgccacccggagaggctcggggcgccc  
ggcagctttcgcatctgcgtgcgcgcagccgccaggggcctgtaggtggccgctatg  
ttcgtcccgcgcatccacacgcgtgccggggaccgagtgtagccacgcgtggggcgcc  
cagtgctcccggctttcggcggtcccagctccgcgccaggcgacaggtttgggctccc  
tgtgtggtggcaagggtggcttactgccaggtggctggagggaatcgtgacctacgg  
agactgcgggaagaggcgccacaggtgttcttggggccac

>IGR2013a

cgccgtgccggggaccgagtgtagccacgcgtgggcgcccagtgctcccggtttcgg  
cggctccagctccgcgccaggcgacaggtttgggctccctgtgctggtggcaagggt  
ggcttactgccaggtggctggagggaatcgtacctacggagactgcgggaagaggcgc  
cacaggtgttcttgggcccacttctcagaggaggggaaaccggcggaagggttagcg  
tctgtgtcttagcgtgtggcgctgtggctgtcaggaaggcgtagaatggattcagggg  
ggcgggagggggctgttcagggtgacggctagcccttctgtagctagtgggtacaactca  
agtcaagggaatttcttcttggcatcaagcaaaagaagtccctccctcccaaaggattt  
gaattttgagcgaagggttctgaaattagggtatctgtgcatttgtctcttctctgca

bioRxiv preprint doi: <https://doi.org/10.1101/282510>; this version posted April 11, 2018. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

tatgaatcctgaagccatcacttgcctgcctgtctcctccagagactggctgggaggggc  
tgaaggaggggcaaaagcattttgcctaagatgctgaaaaatttgagagcagttt  
attccagcgcagctcccctccgactgagtgtagtacctagcagctggctgaggtgaggg  
gagggtaactaagtgcctcgggtggggcaggtcactgcc

>IGR2014a

acttgcctgcctgtctcctccagagactggctgggaggggctgaaggaggggcaaaagc  
attttgcctaagatgctgaaaaatttgagagcagtttattccagcgcagctcccct  
ccgactgagtgtagtacctagcagctggctgaggtgaggggagggtaactaagtgcct  
cgggtggggcaggtcactgccaggtactgttcaacagattccagactggagcctctgtg  
ttctctttacagccaacatgcccactcggatgcgcagagaccctggctagagatgc  
agattaattccaacaaaatcccggggctcatctggattaataaagtgagtgaactctt  
gggttttctgccactgtttaaccatgtacttctggagggaccaagcttcagatgca  
gctcaaaaagggaagtataacgggacaagcaggtgttctccagtggtcctgcctgc  
agggagtgtgcacggccagcctgggctcacttgcctgactcctgccttctccctct  
tgaggtagggcaccacctgaaggcacttccagtttccagcagcaagactttccagcatc  
tgcagagctggagtctgtctcctctaagcgagacccttacaacatacacagcactct  
gcagggtccaatgaacaaatagaagactgagaagtga

>IGR2015a

gcctgggctcacttgcctgactcctgccttctcccttcttgaggtagggcaccacct  
gaaggcacttccagtttccagcagcaagacttccagcatctgcagagctggagttctgc  
tctctctaagcgagacccttacaacatacacagcactctgcagggtccaatcgaaca  
aatagaagactgagaagtggatgctgctgggcagaaacgtgcctggcttagcagaggaca  
aacgagttaatcttgcaccagtcacttggcccaagaagcctatagctggtgcacttggg  
gcaacatagaccctatagacttagtagcaatgatagtattcataataatagctaagtct  
actgaacactcctgtgtgcctggcactgctaagtatttattacattgtgtcattta  
atcctcgcagtagtctgtgggttagacttactaatgtcatcatttccagataagtaaa  
cagaggcactgagaggtagatcataagatcacaaaaagtgatgaagccaagatttgaa  
cttgaacggtctgactcagaaatttactgttaaccataagtataataaacagtaag  
accttagacttcatttgcactgtgtcctacacatcctctggttttaactcctcaa  
attttgttgatatgttttctcatttccgagaagagaaaa

>IGR2016a

atcataagatcacaaaaagtgatgaagccaagattgaactgaacggtctgactcag  
aaatcttactgttaaccataagtataataaacagtaagaccttagacttcatttg  
tactgtgtccctacacatcctctggttttaactcctcaaaattttgttgatatgttt  
ctcatttccgagaagagaaaactgaggggcaaagagatacagtgacaatgccagggttac  
acagtgttaccatccaagtctagcccagagctccctcagtggatgaccaggacccct  
gtgtaagagcccatgtcccaggtgtcctgaggagtcttctaatggaagaagtctta  
cttccatgtgggtgcttacaagccagagagaaacatcccagagcttcaaaccagggtt  
tgggggaggggtgcctgtgtgggtcctagcacatgtgtaacaggcagagggaggtcttg  
tgagctaataatgtgcagctcatccaaactaggtgtcctcctgagagatccagagtgg  
tctgttaagccagcctcaagatgggtgtccaagccagatgtcaggggaaaaaggggaa  
gtcagccttttccagacctgtctggctgggcaggcctgggtctcagactcagcccaaa

gtctgtggtctctgacctgacacagccttatgtgtatgtg

&gt;IGR2017a

c t c a t c c a a a c t a g g t g t c c c t c c t g a g a g a t c c a g a g t g g t c t g t t a a g c c a g c c t c a  
a g a t g g g t g t c c a a g c c a g a t g t c a g g g g a a a a a g g g a a g t c a g c c t t t t c t c a g a c c  
t g t c t g g c t g g g c a g g c c t g g g t c t c a g a c t c a g c c c c a a a g t c t g t g g t c t c t g a c c t g  
a c a c a g c c t t a t g t g t a t g t g t a t t g t t c a g g a g a g a t g a t c t t c c a g a t c c c a t g g  
a a g c a t g c t g c c a a g c a t g g c t g g g a c a t c a a c a a g g a t g c c t g t t t g t t c c g g a g c t g g  
g c c a t t c a c a c a g g t g t g t g c c t g g g a c t c a g g c c t a g g a a g c c c a g g g t a g a g a c a a g a  
g g a g g c a c t c a c g t t a a c a c a g a g g c t c t c a c t g g g g t c c c t g a g c t c c c t g a g a c a a c  
a t g c a g a a t t a c t g g g a a g a g g g g c t g g t g g c a g a c t t g t g t t c t g g a g a a g a g a g t c g  
a t c a t c t c a g c a a a t t c t c a a a g g g a a a a g c c a a g a t c t t a g a a a g t g t g t g g c t t c a g g  
g g g t t t g t g g c t a g a t g a a a g t t c t c c c t g g c a a a a g c a t c t g t g a a a a g c a g c t g t a a g  
c c a g g g c a c t g a a a g a g a c c c a g g t c t g c c t t t t t c t g t g t g a c c a a g g c c c t t g g t  
c c a a g c c t c a t g t g g t t g g t g g c c t c c t t a t c c t t g a g a

&gt;IGR2018a

aaagggaaaagccaagatctagaaagtgtgtggcttcaggggggtttgtggctagatgaa  
agtctccctggcaaaagcactctgtgaaaagcagctgtaagccagggcactgaaagagac  
ccaggtctgccctttttctctgttgaccaaggcccttgggtccaagcctcatgtggttgg  
tggcctcctttatccttgagagatggagctctaggcccatctcagaacagtcagcccacc  
catttagtaactgttctctgctgccagctctgtgccactctaccctctggctgctgata  
gcccaggaggaagactgggcatagtctgagacacagatagtacactttggggatatggg  
gactctagtgttctggctgggcccttactgaggcccgctagatgtgtttaagccaagc  
ctgggcatttgagaaggccagggcctaggacctgcagagtgtcaccgggagtacctgct  
gglttgaccactgtggctctctggtagcataagaggtcaggggtacctfgccttctcct  
tcaggccaggggcagctgaggatccctaccatggccctgacgatcctctttttctcct  
gccctctaggccgatacaaagcaggggaaaaggagccagatcccaagacgtggaaggcca  
actttcgtctgcccataactccctgccagatcgcagga

&gt;IGR2019a

tctggtagcataagaggtcagggggtaccttgccttctccttcaggccaggggcagctga  
ggatccctacccatggccctgacgatcctcttttttctcctgccctctaggccgatacaa  
agcagggggaagagagccagatcccaagacgtggaaggccaactttcgtgtgccatgaa  
ctccctgccagatatacaggaggtgaaagaccagagcaggaacaagggcagctcagctgt  
gcgagtgtagcggtgcttccacctctccaagaaccagagaaaaaggtatccaaggact  
ctgggtccttgggaagccctcaggggaggagggtagaaggaggtcagctggggctggaga  
gcctgcaccaaggctgacagccgctctgcccacagaaagaaagtcgaagtccagccgag  
atgctaagagcaaggccaagagggaaggtgagtggtcctaagcagccaggccttggtc  
acctgtgggccagggtgagcagtggaagaatatgtaaggtgggcctgggcctaagctgct  
tttccctcgacagctcatgtggggattccagccctgataccttctctgatggactcagca  
gtccactctgctgatgaccacagcagctacacagttccaggctacatgcaggacttgg  
aggtggagcaggccctgactccagggtgagctggtccaggt

&gt;IGR2020a

cagtgaagaaatgctaaggtgggcctgggcctaagctgcttttccctcgacagtcag  
tggggattccagccctgataccttctctgatggactcagcagctccactctgcctgatga  
ccacagcagctacacagttccaggtacatgcaggacttgagggtggagcaggccctgac  
tccaggtgagctggtccaggtctggcaggagacccacaggtcagtgaggatgactcttc  
tcttgaggcatggtgctggcacatggtggccattagtgcaggctgcagggttgctgg  
agggcgctcgatgtcttgc aaactaagaaagcacacaacctgacctgtggtctctgctg  
ttccccagcactgtcgccatgtgctgtcagcagcacttccccgactggcacatcccagt  
ggaagtgtgccggacagcaccagtgtctgtacaacttccaggtgcacccatgccctc  
cacctctgaaggttggtgctcctggggcctggcctgcttgactgtctgggtcctgt  
gaagggttcttgagagagaaaagatgatcagaactccacctggcactgaattgattgag  
ttgggcattgccagctcttagccaccatagggggaggcaagcgacggggacactaggaag  
gcagttcagagtgggctgcagtacagtgggggctggtgag

>IGR2021a

tcctggggcctggcctgcctgcttgactgtctgggtcctgtgaagggttcctgagagag  
aaaagatgatcagaactccacctggcactgaattgattgagttgggcattgccagctctt  
agccaccatagggggaggcaagcgacggggacactaggaaggcagttcagagtgggctgc  
agtacagtgggggctggtgagaggagggaagggggcccaggggctgcattttggggtgctg  
gttctccttctcctctgtagcccagcatctgagggtgaggaaggaaagtagggtaggggt  
gggaagcggcgtggcttcagggtttgagaggctgagtcaccaggccagggtcctgttctg  
gaatctctatggcagatagggtccaccgggagggtgtgtgtgtgtgtgtgtgtgcagaga  
gacagagagacagagaaagggcagggggatctggtgggctggaactggaactgcagggtg  
agtgtggctgactgccagccaacctctctgctttccccatccacagctacaacagatgag  
gatgaggaagggaattacctgaggacatcatgaaggtaaagcccttctacctgggca  
ctcttgaagtgacctttctcagtgaggagagagaaccagtgaagcttccaaatcagagg  
atgggtagctgctgtgtgtcacctgggtgcttgcatgtcc

>IGR2022a

caacctctctgctttccccatccacagctacaacagatgaggatgaggaagggaattac  
ctgaggacatcatgaaggtaaagcccttctacctgggcactcttgaagtgacctttc  
tcagtgaggagagagaaccagtgaagcttccaaatcagaggatgggtagctgctgtgtc  
acctggctgcttgcatgtcccacaagtgccacattcacgtggcttgactggtgggaaag  
ccaccatgggaagggaaggcaggtgggaggcctggcctctgacaggccgtcctgaagcaa  
gccttggggcatcagacagctctgtgagtcaggcactatcagcgatgggtccctggcctg  
catcctctgccccaaacatgccccagccctgctagttcgggaaatgcacatcaggcttcaa  
taatcagcccttaggatccgttaatatgatgatggctttatagaaaaagttagcaaatta  
tcctccagggttttttctgcttcagtttgaaagtgaatatagttttgcagccgggg  
gcagtggctcatgcctgtaatccagcactttggaaggcgaagggtgggtggatcacctga  
ggtcaggagtttgagaccagcctgactaacatggtgaaacccatctctacaaaaatata  
aaaattagctgggcctggtggcgcagctgcctgtaatcccag

>IGR2023a

tgcttcagttttgaaagtgaatatagttttgcagccgggggcagtggtcatgcctgta  
atcccagcactttggaaggcgaagggtgggtggatcacctgaggtcaggagtttgagacca  
gcctgactaacatggtgaaacccatctctacaaaaatataaaaattagctgggcctggt

bioRxiv preprint doi: <https://doi.org/10.1101/2025.10.25.1025002>; this version posted October 25, 2025. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ggcgcatgcctgtaatcccagctactctgaaggctgaggcaggagaatcgctgaacctg  
agaggcggaggttgacgtgagctgagattgtgtcattgactccagcctgggcaacaaga  
gcaaaactccattcaaaaaaagttttgcagtagttgtacgccagctgttcattagc  
ccaaaaaattgagacatggatgtcgttccttatctctagcttttctagtcatttttct  
gatttattatgctaacctttgtttaagccacattccctcttactatgtccttacacagt  
tgagaggggaagtcgtggagatgctataccagagagtggtgtgagaggggtgggaaatg  
aattgaggaccagtgccaacatgcatttctgcctcctccctccgggcccctgtcctgac  
tgcagtgcacttctgcacatctctgagattgtgaaaatggccaagggtgtgatactggc  
tgagaggagctggctcattgagggcagggccacagggtga

>IGR2024a

atgctataccagagagtggtgtgagaggggtgggaaatgaattgaggaccagtgccaa  
catgcatttctgcctcctccctccgggcccctgtcctgactgcagtgcacttctgcac  
ctatctgagattgtgaaaatggccaagggtgtgatactggctgagaggagctggctcatt  
gagggcagggccacagggtgagctgcactggaagggtgatagccttctgcttct  
gtccccagctcttgagcagtcggagtgccagccaacaacgtggatgggaagggtacc  
tactcaatgaacctggagtcacgcccacctctgtctatggagactttagctgtaaggagg  
agccagaaattgacagcccaggggtgaagaaggccctggatccttatggcttcttagatg  
agggagaaccacgtagggtgagaaaagcttggggcagggccaggagcagggcggttaa  
agcatctgggtactgacacattgtgaattagctacggctgccatgccttaaggttgcc  
tgaagctgagtggtgttactgtgtgtgggaagagcagaggccatgtctatggcctt  
caggggtagggggaagcacacctgatgccaccgtcccctaccctcatacaaccttctca  
catcttctaggggatattgggtgagctctacagcgtgtct

>IGR2025a

cattgtgaattagctacggctgccatgccttaaggttgcctgaagctgagtggtgttt  
actgctgtgctgggaagagcagaggccatgtctatggccttcaggggtagggggaagcac  
acctgatgccaccgtccccaccctcatacaaccttcttcacatctctaggggatattg  
ggctgagctacagcgtgtcttcacagatctgaagaacatggatgccacctggctggaca  
gcctgctgacccagtcgggttgcctccatccaggccattccctgtgcaccgtagcagg  
gcccctgggccccctcttattctctaggaagcaggacctggcatcatggtggatatggt  
gcagagaagctggacttctgtgggcccccaacagccaagtgtgacccactgccaagtg  
gggatggggcctccctccttgggtcattgacctctcagggcctggcaggccagtgctgg  
gttttcttgtggtgtaaagctggccctgcctcctgggaagatgaggttctgagaccagt  
gtatcaggtcagggaacttggacaggagtcagtgctggcttttctctgagcccagctg  
cctggagagggtctcgtgtcactggctggctcctaggggaacagaccagtgacccaga  
aaagcataacaccaatcccagggtggctctgcactaaga

>IGR2026a

gctggccctgcctcctgggaagatgaggttctgagaccagtgatcaggtcagggacttg  
gacaggagtcagtgctggttttctctgagcccagctgcctggagagggtctcgtg  
tactggctggctcctaggggaacagaccagtgacccagaaaagcataacaccaatccc  
agggtggtctctgcactaagagaaaattgcactaaatgaatctgttccaaagaactac  
ccccctttcagctgagccctggggactgttccaaagccagtgaaatgtgaaggaaagtgg  
ggtccttcggggcgatgctcctcagcctcagaggagctctaccctgctcctgctttgg

bioRxiv preprint doi: <https://doi.org/10.1101/2025.10.25.582500>; this version posted October 25, 2025. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ctgaggggcttgggaaaaaaacttggcactttttcgtgtggatcttgccacatttctgat  
cagaggtgtacactaacatttccccgagctcttggcctttgcatttattatacagtc  
cttctcggcgcccaccacccctcaagccccagcagccctcaacaggcccaggaggga  
agtgtgagcgccttggtatgacttaaaattggaaatgtcatctaaccattaagtcgtg  
tgaacacataggacgtgtgtaaatagtacatttgccttttataaaaagtaaattgtt  
ataaggggtgtggccttttagagagaaatttaacttga

>IGR2027a

cccccaagccccagcagccctcaacaggcccaggagggaagtgtgagcgccttggtat  
gacttaaaattggaaatgtcatctaaccattaagtcgtgtgaacacataggacgtgtg  
taaatagtacatttgccttttataaaaagtaaattgttataaggggtgtggccttt  
tagagagaaatttaactttagatgattttacttttttgaaacactgatggacttatt  
attggcatcccgcctgaacttgactttgggggaacaggacatgcatttataaaaat  
cctttggccaggcgcggtggctcacacctgtaatccagcactttgggaggccgagatg  
ggtggatcacctgaggtcaggagttcgagaccagcctggtgaaactccatttactaaa  
aatgcaaaaattagctggcggtggttgcgggtgcttgaatccagctactcaggaggct  
gaggcaagagaatcgctgaacctgggaggtggaggttcagtgagccgagaacatgcca  
ttgactccagccgggcacaaaaaaaaaaaaaaaaaacctttcatttggccggg  
catggtggcttatgctgtaatcctggcactttgggaggccaaggtgggcagatcacctg  
aggcaggagtttagaccagcctggccaacatggtgaaa

>IGR2028a

aaactgggaggtggaggttcagtgagccgagaacatgccattgcactccagccgggca  
ccaaaaaaaaaaaaaaaaaacctttcatttggccgggcatggtggcttatgcctgt  
aatcctggcactttgggaggccaaggtgggcagatcacctgaggtcaggagtttagacc  
agcctggccaacatggtgaaacctcatcttactaaaaatacaaaaattagccgggcac  
ggtggctcacgcctgtaatccagcactttgggaggcagaggcgggcggatcacgaggtc  
aggagatcaagaccatcctggctaacacggtgaaacccgtcttactaaaaataaaa  
aattagccgggccttagtggcgggtgcctgtagtccagctactcgggaggctgaggcagg  
agaatggcatgaacccggaggcagagcttcagtgagccgagattgcaccactgacta  
cagcctgggcgacagagcgagactcgtctcaaaaaaaaaaaaaaaaaattagccgggcct  
ggtggcgggcgcctgtaatccagctactgtggaggctgaagcacaagaatcactgaac  
ccgggagatggaggttcagtgagctgagactgtgccactgcactccagcctgggtgaca  
agagtgagactttgtctcaaaaaaaaaaaaatcctttgt

>IGR2029a

agactccgtctcaaaaaaaaaaaaaaaaaattagccgggcctggtggcggcgccctgtaat  
cccagctactgtggaggctgaagcacaagaatcactgaacccgggagatggaggttga  
gtgagctgagactgtgccactgcactccagcctgggtgacaagagtgcactttgtctca  
aaaaaaaaaaaatccttttgttatgttcacatagacaatggcagaaggaggggacattc  
ctgtcataggaacatgcttataataacatagtcacctgtccttgactatcaccagggtg  
tcagttgattctgggctcctggggcccaaggagtgttaagtttgaggcatgtccatag  
gtgatgtgctctgtaacacacagatgctgtccaaaaagtcagttgatatgacacagtc  
acagacagaacagtcagcagcccaagaaaggctcctcacggctgctgtgctgggtagcact  
tgccatccagttttagagtgtgaaatgctctgtctgtaccgttcaatacagtaggcac

tggcactagccacatgtgccagetaagcacttgaaatgtggccagtgaataaggaattg  
aacttttaattgcatttaataaactgtatgtaaafagtcacatgtggtcagtggttacca  
tattgaacagtgcaggtagatactggactgggggcagatc

>IGR2030a

tgatgaaatgctctgtctgtaccgttcaatacagtaggcactggcactagccacatgtgc  
cagctaagcacttgaaatgtggccagtgaataaggaattgaacttttaattgcatttaa  
taactgtatgtaaatagtcacatgtggtcagtggttaccatattgaacagtgcaggtag  
atactggactgggggcagatctgaggagaggggtttgagtagtgggaggacactgggga  
taggggcttggggctatttacctgccattttgagtagtttgcatttttagcagccaaca  
taactattggtgtgaataaccagccctgcagtgtagcatgagacaggtccatgcacacat  
gcattaggaaaacacctcatgaagcaggattctgcctgggctgatgcacacaacctcta  
tggagggtaaacagtgtttctgaagaccgtagtttgggaaccttgacatatgacaatgc  
cccccttagataagctcaagttacaggaatgtctgagggtggaaggtgtggatatgtgctt  
ttcctgtctccctcttcagtgtctggccatggggcataaacactaccagcagtaggtag  
gctggccaagagaagccagcttgcataccagcatcatctagggaatggaatcatggcag  
taatacgttgcttaggaaacaaaagctctatggacacatc

>IGR2031a

ttacaggaatgtctgagggtggaaggtgtggatatgtgcttttctgtctccctcttcag  
tgtctggccatggggcataaacactaccagcagtaggtaggctggccaagagaagccag  
cttgcataccagcatcatctagggaatggaatcatggcagtaatacgttgcttaggaaa  
caaaagctctatggacacatcttccacctctcagtcaccagaaacctatgtactgtgac  
cccgtcactaggcccagccctcgggaagagtgtgggcccttgaaaagggaagactgagt  
gagaaaaatgatgagaaaactacaaaatgggcagaggtcagttgacacattcattctctg  
tcaagctcaggaagtactggtccctgatcttgagatgctgtgtgagtggcagggggact  
cctgctgggttaaattctatgttgatgcctggacaggccctatcccaggccctgct  
tgtcagaagctcccttgggccgagcgcggtggctcacacttgaatcttggcactttgg  
gaggccgaggcaggtggattgcctgagttcaggagttcaaaaccaggtgggcaacatgg  
tgaaacctgtcttactaaaaaaaactaaccaggcgtggtggtgcatgcctgtaattc  
cagctactagggagggtgaggcaggccaatcacttgaacc

>IGR2032a

gccgagcgcggtggctcacacttgaatcttggcactttggaggccgaggcaggtggat  
tgcttgagttcaggagttcaaaaccaggctgggcaacatggtgaaacctgtcttacta  
aaaaaaaaactaaccaggcgtggtggtgcatgcctgtaattccagctactagggaggctga  
ggcaggccaatcacttgaaccaggaggtggaggtgagtgagctgagatcacgccact  
gcactctagcctgggcaacagagcgaactctgtctcaaaaaaaaaaaaaaaaaaagaagt  
ctacttggaaagctccacttggatttctcaagaatagcttcacctgggaacagaggaatag  
acaggatggactttccagctccttcagggaccagcccttttaagatttggattgaggt  
ggctagccacctgtggcttccatctgggttctcctagtgggtgatggcaggtggtgcaga  
gcaaggtagagtggactgacgggaggaaagtataccaccagaacaagcagcagctctg  
actcttttctcctgcccttaattctaatccctgatggagggtaggcagtgagtatgtg  
aagtcttaggcagctgtggaatctctcaagttctaaagcaaaagtaattgcttgaata  
ttacaaaaaagagagaggaattatgtccatcagcttccaa



>IGR2033a

cgggaggaaagtataaccaccagaacaagcagcagctctgacttcttttctcctgcc  
ttaatctaatacctgatggagggtaggcagtgagtagtggaagtcttaggcagctgtg  
aatctctcaagttctaaaagcaaagtaattgcttgtaaattacaaaaagagagagga  
attatgtccatcagctccaatctccacaaccaagatggagtcctcaattccccatccc  
ctctgatcccaggagtcctaaatgattggtagcaattgcttggaatctccaggaggagac  
ctcaaaactctccccctggcccccatcacaatggagctgggtcctagggaaccaagcctgga  
gtagtgtgggtagagccagaccttcaggatggagagctgtccatcacatcctaccaa  
gacttcagccttttctaggaaaagaaactaaataaggtctgacagctcacctaaaggtg  
atggcagctgacactaccgagtcattagccaaacagtcctgaaacggagcagtagtagt  
aagatctgaaccaagttgtgcttaataattagatcattctaaggacctgacagtgttc  
tgtgggtcattctcaagagttcagtagataagcactaatggtggaagttctagggtgagg  
agctaggaggtgttgaaagatctgtttgctgggtgtgt

>IGR2034a

agtcattagccaaacagtcgctgaaacggagcagtagtagtaagatctgaaccaagttg  
tgcttaataattagatcattctaaggacctgacagtgtctgtgggtcattctcaagag  
tttcagtataagcactaatggtggaagttctagggtgaggagctaggaggtgttgaaa  
galctgtttgtggtgtgtgatgagataactgtcatcaaggaccactttccactgggg  
taaaactgacaaaagtggtgctcagccacaccagctagatttctcatgttgggccaagttt  
acagacatttgcgggcatttgtggttagtcatgggttccctgccttaactccaaaagg  
tatagctggctggtcactttcattgggctggttattcattcagtcacttggcaatagg  
aagaaagctagaagctaataaggcaaaccatcccttctgtgtgtcagctttcaacatct  
ctcagtgactgtgtgcagggtgtgtgaccattacaactccaaaggaaagagctttctc  
tgattttctggaagtctccagtggggcctgccaaagtgggaactgaaatcctgggtag  
ccctgggaagtggagtttttctctaggagtagtctcctggttgggtgggctgggaa  
acagccaggtgtcattctctgggaccacttgatcttca

>IGR2035a

ggtgtgtgaccattacaactccaaaggaaagagctttctctgattttctggaagtctc  
cagtggggcctgccaaagtgggaactgaaatcctgggtagccctgggaagtggagttt  
tttcttaggagtagtctcctggttgggtgggctgggaaacagccaggtgtcattct  
ctgggaccacttgatcttcacactgtgtacagatccaaactctgcccttatacttga  
ggggaaaggggtacagatgtcctccagcagtcctgttgagcaccagggctaata  
gtgacctatagaaaagctttgtctctgtcagatgtaagtgttcttaacttgggcac  
aactgatcttcaattcatcagaactcagcactaacctttcccagttctgctggctgtc  
acagaggaaggaggcctggggtgggagaagggaagctggtgccctcctttccagggt  
gaaagtacttggcagggtggagcttggctttatcatccggagctcccttggggccaag  
tcaaggcctcagaagggtatagctggctggccgcatagtttctagctccaggcagct  
ctcaagagaccattatgctggttttctcagggttaaggagttacagaagtccacctctg  
ctggctcagtggttaagacacaagcctgcagagtctgctga

>IGR2036a

gagcttggctttatcatccggagctcccttgtggggccaagtctaaggcctcagaagggt  
atagctggctggccgcatagtttctagctccaggcagctcctcaagagaccattatg

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ctggttttctcagggttaaggagttacagaagtccacctctgctggctcagtggtaagaca  
caagcctgcagagtctgctgagtgaacttcagctggggagatactggaggctatggagc  
aaggacatggggactgaatgaaagaggggaggcagacgtccagcccaccattcctcacc  
aaggagatgatcccacaagctcacaatgagcagaactggaaaagacctcaaagtgtggc  
tggataatggcaacacaggcctcagtgctcactttgtgctgggtgctatgccaagcacc  
acgtgtgtaccacggcactggcacccaccacggccctgttcacagaccaggaaaccaa  
ctctcaccacctaatacagatggagccttgggtccaacccacatcatctatctgtgcca  
gaatccaggttgggtccatatacaggctgcctgagagaagaacacggaggcctgcacaaga  
agctggggagagctagcaaggggcaggcccgagcaccttatccaagcaagcacttgtg  
gatgctgaggggaaggcggcaaaagctgcagctgctgtgct

>IGR2037a

atggagccttgggtccaacccacatcatctatctgtgccagaatccaggttgggtccat  
atcaggctgcctgagagaagaacacggaggcctgcacaagaagctggggagagctagcaa  
ggggcaggggcccgagcaccttatccaagcaagcacttgtgatgctgaggggaaggcggc  
aaaagctgcagctgctgtgctgccctgccttcagctctcctccctccccagcacacac  
acctccaacaccccttggaacatggctctgccgtacagggcccaggccccaacaggg  
tagggtttggccacatgacctggaggccacctgcagtttcgaagggtggggccccag  
ggggccgagacacagacaggcctgtaacttggcctcagtcagggggcagcttggccaca  
ccaggcctgtttggagcaaacgggggactctggcctgtaggccttatctcagctcccag  
gatcaaagaggacttttagccatgtttctgtctcagcaagacaacctagtctcctgttc  
tgcittaaaccagacctctgttgggtcctggagttcctcagaggcttgaccctggatg  
gctgtgagactcaggacctgcacagatgcattctcattcccagccaccaggctcgggtc  
agacctatggctctgggtgggcctaattcctggttcttg

>IGR2038a

gccatgtttctgtctcagcaagacaacctagtctcctgttctgctttaaccagacctc  
tgttgggtcctggagttcctcagaggtctggacctggatggctgtgagactcaggacca  
tgcacagatgcattctcattcccagccaccaggctcgggtcagaccctatggctctggtg  
ggcctaattcctggtttcttgatccctgagaacacctggcacctctggctgctggccagt  
tgccaccttacatcaggcgggcgctgggattcacctgcaggttcttttaggaaggccc  
tcccctgccctcctgtgccagcccagaggggcagcctgggtgaggtcttcacatccatt  
cgggcaaatgccttggattggctggatcccctcctgtttctgccctccttcttcttc  
aaagcaacaaggttgtgggggtgtccagtctgtaccacctctccctcacactgtcaat  
ctggaatttgtccagaattggggcccaagtagtgagttcttacacagtgttaaaaaac  
aaacaaacaaaaacccacacaactcagctacaccttggctcagagaggccatgggatat  
accgaggatctcagatcaggagggaggccctggagaggtgtggcggggatcatgtgctt  
ctctggttcttgagaaaagctgactttgtgtaacaagg

>IGR2039a

ggggcccaagtagtgagttcttacacagtggtaaaaaacaaacaaaaaaacccac  
aaaactcagctacaccttggctcagagaggccatgggatataccgaggatctcagatcag  
gagggaggccctggagaggtgtggcggggatcatgtgcttctctggttcttgagaaa  
gctgactttgttaacaaggagggcatatggacatggagttggtgtttggggatgtggga  
accattaggccagaattacaagaagtctgtcatgtcggccacactaggggcaacagtgga

bioRxiv preprint doi: <https://doi.org/10.1101/2025.10.25.1025002>; this version posted October 25, 2025. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ctggggcaggggctgatgacctgattgtggaggcagtgaggggctgtttctgctggggac  
ccagggtccctccaagtgcctccttgcttggcttgggatggggagaggagctggagt  
tgggatggggagaggagctggagttgggatgggtcacagcgaaggctacagcctggcatt  
cccataagggttaggggtgggggtggggtagggagggagggacctgaaggggtgtcca  
acttccgagacttggaaacagcctggtagtggatcaccattcttctgcataggtgg  
cgagcagccagagtctgggcacaggagacctatcccccaagcttgctggcctgcct  
caggtcactgaagaggacccatttttggtctttggccat

>IGR2040a

gggtgggggtgggacagggaggaggacctgaaggggtgtccaacttccgagacttggaa  
agcctggtgagtggtcaccattcttctgcataggtggcgagcagccagagtctgg  
gcacaggagacctatcccccaagcttgctggcctgcctcaggtcactgaagaggacc  
ccatttttggtctttggccatcctaagactgtacaatggagccctggggccctccctc  
tctgaccagtgcagccctcacaggcaagcctcaccctctagggcctgtcccttctgt  
ctgccagtccccacagggcttgcgggtacccaatctcgccaaccagactggaagctccc  
caggggcaagcagcttatcttccatattctcacagtgttcagccaggttggcacttc  
agagcatctcctgctcagcagagatgttagcatctctctatagtagcatttct  
gagtcctccctgggggaaccaggttagactctgggggtccagaggagcaggcaggtga  
gaggcaaaaagggcacagaggaataaccaaccctgccctgcagtagagccctgggcaaa  
acaggccatgaccaaccagcagccaaggtcaaaagccccagaacaagggccagtgtgtgc  
atgacatgcagcaggaccgttctctttcggcagtact

>IGR2041a

accaggctagactctgggggtccagaggagcaggcaggctgagaggcaaaaagggcacaga  
ggaataaccaaccctgccctgcagtagagccctgggcaaaacaggccatgaccaaccag  
cagccaaggtcaaaagtcctcagaacaagggccagtgtgtgcatgacatgcagcaggaccg  
cttctctcttcggcagtactggagatagaaggctgagtcattaacaactttctttatt  
aaaaatgtacataagtaaaaggaacatggttaattgtgcaaagagtaagaaatacagat  
gagcaataaacacgtattaaagccacctacgatataccaccagaagtaaccaggctgtt  
gaatttttagagactgggggtgcaaacacatttttactcccttgctcatatatctggga  
gctctgccatatacagacacagacgcgggtgtccacaggcgatgcctctgctgggaatgct  
gcaagcaggagtctatcctttccttggtactggctcggggggccctcctcagcggccaggtc  
actctagcatccaggagtccaaaggccggctgtgcaggctgcagaggtgatctagagta  
gattaggaggtgcaaaaggcttgagataggctgaccaactgttcagtttgcttaggac  
tgaggagtttccaggatttgggactttcagtgctaaaac

>IGR2042a

ttcttggtactggctcgggggcccctcctcagcggccaggctactctagcatccaggagtc  
caaaggcccggctgtgcaggctgcagaggtgatctagagtagattaggaggtgcaaaagg  
cttgagataggctgaccaactgttccagtttcttaggactgaggagtttccaggatt  
tgggactttcagtgctaaaactgggaaagtcccaggcaaacagggccagtgtgtcacc  
tcctgagggccaaaggcttctcctgccctcctgcctgtgtccccatctgccctcc  
tgctgggggttctggtccccatccccacaccaagcagcccaggacagaggcctggctg  
gggccttgccctcccgtggaagctcctgaaagtccagcctgaggcctaggaggggacagg  
gaaagggaataaattaaggcagacagtctgtcatcaccgaagaaagggccaggtgaac

tgtggctgttaagggcagctagggatgtacaagcagaaggggtccaatacttggctggcc  
acccctccagccctggagctgagtgtgtggtccccagaggccccagagccagagaagtgc  
agggtgtctgattgaaaggcctcagctccctgggctcccagagccctggcctcaggc  
cttaccttccccctcctccatctccacacccctggcact

>IGR2043a

tagggatgtacaagcagaaggggtccaatacttggctggccacccctccagccctggagc  
tgagtgtgtggtccccagaggccccagagccagagaagtgcagggtgtctgattgaaag  
gcctcagctccctgggctcccagagccctggcctcaggccttaccttccccctcctcc  
atctccacacccctggcacttctgtcagctcttctctacctaagactgggagcagag  
gatgaaggaagaggaatccaggacagaccgagctgaaagaggagcaggcaggtgggaggg  
gacttgggtagaaaggacctctctgatagtggcaggaacatcctgactgtgtgttggccc  
agccggctgtctatgcctgaggatgcctgaggatggggggcccttggaaaactcagaaga  
gaggctaggtgtggaaggcagagtattgtccacagtggataaagaggtccacgtccta  
atgcatgagcctatgaatatgtgtcatatggcaaagaggaattaaaactgcagatggaa  
ttaaggttgctaaccagctcacttgcataatagagagattaccctggattattgtgtggg  
cccagtgtaatcacaaggggtcttaaatgaagaaggaggaggcagaaggggtcagaaccag  
agagatcgcatgtgaaaaacctgaccagccagtgtctggc

>IGR2044a

tgttgctacatggcaaagaggaattaaaactgcagatggaattaaggttgctaaccagct  
cacttgcaaatagagagattaccctggattattgtgtgggcccagtgtaatcacaaggg  
ttcttaaatgaagaaggaggaggcagaaggggtcagaaccagagagatcgatttgaaaa  
acctgaccagccagtgtggctttgaaagtggaggaaggggtgcaggccaaggaatgca  
ggcagcctctaaaagctggaaagggaaggaaggaagggattctccactagagcccca  
ggaagaaatgcagctctgttgacaccttgagtttagcccagtgagacctgtttggactt  
ctgactacagaactataagaaaagaacggggccaggtgcagtggttacacctgtaatcc  
tagcactttgggaggctgaggcaggcagattgcttgcccaggagttgagaccagcca  
gggcaacatagttagaccctgtctctataaagtatacaaaaaattagccaggtgtgtag  
cacgtgcctttagtctgtgacttgggaggctgaggttaggaggatggcctgagcccagg  
agggagaggttgagtgagtgcaagattgagccactgcactccagcctgagtgacagagca  
agacctgtatccaaaaaataataataaaaaattgtg

>IGR2045a

tgctctataaagtatacaaaaaattagccaggtgtggtagcacgtgcctttagtcctgg  
ctacttgggaggctgaggtaggaggatggcctgagcccaggaggagaggttgagtgag  
tcaagattgagccactgcactccagcctgagtgacagagcaagaccctgtatccaaaaa  
ataataataaaaaattgtgtgttttaagccctgtttatgataattgttagagcag  
caataggaaactgatccactgggaaaccatttgggggatgcagctgccccaaatccctgc  
acgtgggttgactcagcctcacaggctctacagcctctctgtgaaagactccattccc  
tctgggagaagctcagactctaaagccctgggcagggaatgggcctccatggcatggagg  
gggtcaagaaggtgccccccaggatagtgcctctgctggacctctctataggaagcagc  
tgctctttgagccccctcccaaacctcagtgagctgaggtgctggctctgagtggtca  
tggaggggcttgctgaggtcaggccacctaggacagctagttagagccacagggcttg  
gcttaagattcccaggaaggaggtgcatggccctccacatccgaataactcataaca

ctctcagtccttggccttactaaggggaataactaaggggac

&gt;IGR2046a

cccaaacctcagtgagctgaggtgctggctctgagtggtcatggagggggcttgctgagg  
tcaggccacctaggacagctagtcagaggccacagggcttggttaagattcccaggaag  
gagttgcatggccccccacacatccgcaatactcataaacctctcagtccttgccctta  
ctaagggaatactaaggggactcagtttagctctgaaaaagctaggactactggaaaaaa  
aagtatagaggaaaaaaaaaatagtactggatgccagccagatctgcaaaaagtgccact  
ctgccacttactagctatgtggcctcaataagccactagacctttttagcctcagttt  
cttcactctgtaaaatgggtataaacatcattgtcttatctgtctcacagggtgtgtgagt  
ctcaggtgagataaacacacagaaaaacattgtgccgcacaacttgagatgaaacagtaa  
cgatcacaaccccacatgccttttgatagggtgaatgatcacagcatcctgtgttaggga  
ggaaagggtgagcacagacgcttcaaaactctgtcttacctataggcagaagggtgtagc  
ctggccaggggagaaaaaggaccagccactgccaccgccccgcagctcacaccggtgtg  
cgacagagccaccatgcagccccacaggatgtcctccaac

&gt;IGR2047a

cttttgatagggtgaatgatcacagcatcctgtgttagggaggaaaggggtgagcacagac  
gcttcaaaactctgtcttaccataggcagaaggggtgtagcctggccaggggagaaaagg  
accagccactgccaccgccccgcagctcacaccggatgtgcgacagagccacatgcag  
ccccacaggatgtcctccaaccactacagactgtggggccttgctttttttttttt  
tttttttaagaaaaagggtttctagtcttctctacattaaaaacaatccctccttctc  
ataaagcacaattttacagaggaaaagggagatgtgaaactatacacaaattcaaatctaa  
ttaatatataatttttgtggaatacagatggagggaatacatcacaaactaaagggtg  
attatctttggatggtgggattacaggtgattatatattttatatattctatagttaa  
aaatattccatgatgacctataaattacttttacttatttttgagacaaaatctcacct  
gttgaccaaggctggagcgcagtggtgcaatctcggcctagtgcgaatctcgggtgtagtct  
cgacctcacaggtcaagtgatctcccacctcagcctccggagaagctgggactacagg  
tacataccaccatgcccgctaattttttgtagagacagg

&gt;IGR2048a

ataattacttttactttatfttttgagacaaaatctcacctgttgaccaaggctggagcgc  
cagtgggtgcaatctcggcttagtgcaatctcgggtgtagtctcgacctcacaggctcaagt  
gatctcccacctcagcctccggagaagctgggactacaggtacataccaccatgccag  
ctaattttttgtagagacaggatttcgccatgttgccatgctgggtctcgaactcctgag  
ctcacataatcctcctgctcggcctccaaagtactgggattatagggtgagccacct  
tgactggcctataattacttttataatcagaaaaaaaaattataaataaatatgaaaagtg  
ccaggaactttctttgtggagccacacactgggctcaaggaatcattgagctgggttc  
tgcaggggtgggagctcttggcgcgggcccctggctccttgctgtgacacctggagactcac  
tacttccctccctggccttgtttgacctggaagacaagatgctccctagggtcctttg  
cagcttaataagtaaagtattcgccttggctctcatccatcccagctctttgccagcttc  
cagtactcctctgtgcttggagagaaggggcaagcgccttactcatgccttgaggttgct  
gaccacttccgtcaccagcctcgcctccttcagacctgcc

&gt;IGR2049a

ttgtttgacctggaagacaagatgctccctagggctctttgcagcttaataagtaaagta  
ttcgcccttggtctcatccatcccagctctttgccagcttcagtgactcctctgtgcct  
ggagagaagggcaagcgccttactcatgccttgaggttgctgaccacttcctgtcaccagc  
ctcgtcctctccagacctgccctgggagtcctctgcctcctggccttcactgcatcacgg  
tctgcacttctcagagccctgcccttctctgaagaacaagcctggccaaattgtgtcag  
ccctctggcctgcagtgacccctgcttacattgtacataacaatagctataacttattga  
cattaacttcaggtcacatagcaaaagtgtctctcatttaaactcttaggccaccagaggat  
ccatagactaaaatgttaacagcatctcctggagttgtggagtgtgtgtgacctatgtga  
tcctcctgtgccactgagagatatattattaaccagtttactgataagataactgagg  
ctcagagaggtcaagtaacttgcccatgggtcacacagtgggtccatggcagagctgggag  
gtgatccctagtcagttccctccaagtcaggattttctactcccacaatggtgtctcc  
cttaatgactctcacattccagcctctgagggcaggaagg

## &gt;IGR2050a

gataataattataaccagtttactgataagataactgaggctcagagaggtcaagtaac  
ttgcccatggtcacacagtgggtccatggcagagctgggaggtgatccctagtcagttcc  
ctccaagtccaggattttctactcccacaattggtgtctccctaatgactctcacattc  
cagcctctgagggcaggaagggtatgttctgagtgaacacacagagagcactcaatgat  
gtctgggtggaagatgtaatcatgagctcaatcaaggttatcattaaatcaacaagt  
cttctagtgtgtctgggagctctggggcccaggacaggcctactgtagtctagttg  
tattctggcacctggtggttctggcacatagccccatgttcattaaatgacatgaattga  
ttgtccattcaataataaaaaaataataataataactagctaacaggtatggagtcc  
tacaaggccagccacctcagggagtttccaggacagttgaggagaaaacataacactgtga  
caagagctacaacgttagggtttacacaaaacagtgtctacgtaaacagtgtctatcaa  
agagagaaaaatgatgggcagacacctgatcctccacagtgctaaaggccatgccag  
ccactgtccccattacgacttgcataatactgactgccgaa

>IGR2051a

ggagtttccaggacagttgagggagaaacataacactgttgacaagagctacaacgtaggg  
ttttacaccaaaccagtgctctacgtaaaccagtgctctatcaaagagagaaaaatgatgggc  
agacacctgatccttcccacagtgctaaaggccatgccagccactgtccccattacgac  
ttgcataactgactgccgaagcacacaaacctgaattttccgtctgcattcatcgttct  
gtctgttcggatcacatctggatactactgttgccctccagactggataaccagtcctgc  
tgaggggccagaagatgggtgagatggaaactagtcatgtttacttggagaagagaaatgaa  
gaccgtctttaacacctgacaggttgctcttcccaagagggggccagagggcaacagccat  
ggfcaacagctccaggcaccctgaggaagcctgctccagctggcagggttgcttgcaa  
gggaccagtcctctcttgagaagtggtgagcccagtgggctgcctctccagcaggatc  
ctgtagagaccttactctctacaatgcacactccacacacttgctcacttgacaacact  
tattataactgtcacctggggccattccaggttagggacataaggatgaataaaaacaag  
gtctgtaccagtagagaacatcagtcaccttaggggagaaa

>IGR2052a

gagaagtggtagccagtgggctgcctctccagcaggatcctgtagagacctactctc  
tacaatgcactccacacacttgctcacttgacaacacttattataactgtcaccctg  
ggcccatccaggttagggacataaggatgaataaaacaaggtctgtaccagtagagaac

atcagtcacctaggggagaaagtcaggaaagcctcatcctgagccttcgactccttactg  
tccatcctctaggtcctgtctcagcttctgctgaaggctatcttctccttgattctg  
cagtgaccaggcatatggcagataatcaacaatacaggcatcctgaagagggtatcct  
gggataaaagccccagctggatcagtgctatacaggggccaactgggggtgggtccagg  
cagggtcatttgcaagggtccctctgccccctcaagtcctgccagacaggccttgccat  
ggtttctcctgccccgtccccgaccacagttgatctccccgtggtgttatgaaatgt  
caaagaatgtctgcaatcctaattccataatgatctttatcttctgttccccctgagg  
ctctcaatctgcagtaacagctgtggttcagcaagcagtcgggcactctggagtgtgt  
tctgaaacagggccggcgtggggcagagctcatctgtctgc

>IGR2053a

ccccgaccacagttgatctccccgtggtgttatgaaatgtcaaagaatgtctgcaatc  
ctaaattccataatgatctttatcttctgttccccctgaggctcctcaatctgcagtaac  
agctgtggttcagcaagcagtcgggcactctggagtgtgttctgaaacagggccggcgt  
ggggcagagctcatctgctgccctatccattcactgtgctgttcagggttagagaagatt  
catgtgtgtatatgctttttaaattgtgaacaataattatgcagaaaaatacataga  
atatatgttcagtttaacaaataatcataagcaaatctctataaaaccactgtctct  
gcagtgcacctgttccccctaaagtcgtgcataacaatagctacaattactgaccatg  
aacttcaggtcacacagcaaagggtgttctcatttaattttggccaccagaggctgcata  
gactaaatgtgaacagtgccccctgcagttgtggagtgtggtgacctattggatcttc  
tcacgccactgagggatatactgtttctgtagagaagtcagcagagtcactgtctctgg  
ggggcatccttctgatgcccccatgccatgaaggccattccttgcccagggtctag  
agtctgagcttctccaagagggaatggagtctttcgcaga

>IGR2054a

tccccgcagttgtggagtgtggtgacctattggatcttctacgccactgagggatat  
actgttttctgtagagaagtcagcagagtcactgtcctggggggcatccttcttgatcg  
cccccatgccatgaaggccattccttgcccagggtctagagtctgagcttctccaaga  
gggaatggagtctttcgcagagggggtgtggagcctcgtgaaggctgaatctaaccacgag  
cagggtatttgggcagctgcataatccagatggttcccagtgatcagcttctgttgc  
tgctctaataaaactaacataaaacttaggggtttaaacaacacaaatttcttttata  
gttccgtaggtcagaagtcaaaacaggtctcactgggctaaactgaagggtgcagcagg  
gctgcattccttctgggggtctagtagagaatcttcttcttcttcccccttccagc  
tttagagggtgctgcattccttgccctgcggcccccttctccaccttcaaagccagca  
ctggctgcccaggcttctcatatattgcaatctctctgcttctgcttctgaccttctgc  
ctctcttctccatttaagaatgcttgtgattacattgggtcacccacccagtttct  
acccaataatccagggtaatctccaaacttaagagaga

>IGR2055a

tcttggcctgcccccttctccaccttcaaagccagcactggctggccaggcttttc  
atatattgcaatctctctgcttctgcttctgaccttctgcttctcttctccatttaa  
gaatgcttgtgattacattgggtcacccacccagtttctaccaataatccagggtaa  
tctccaaacttaagagagaaaaaactactagcaccacccaaagcacctacgtgtcccc  
tactaatcacaaccccaacctcccttctgcataagtagacatttgaataattctgtgc  
ttttgtagtttgacctcctctgcattatccttaacaatacagtttgcagctgttaa

atTTTgctaaaaggaattatactgtatgcattctTTTgtaggTTTattcattgatgag  
tcattTgttattacagtattattatccaatatgacaatattacagtattgcaagtcgct  
gtagttcatttcactccaggaacactgcacaattattTgtactctccactTTTgatggT  
cattTggacattTTTctggTgctgtgtgggtattctggTgcacatgggtaagagtgtggT  
tgagaagattctgaggagtgggactctTgggttacagggtatatatatgtttcatctt  
taaaaaaatttatattattcattTTTTtaagactagtca

## &gt;IGR2056a

gaacactgcacaattattTgtactctccactTTTgatggTcattTggacattTTTctggT  
gctgtgtgggtattctggTgcacatgggtaagagtgtggTtgagaagattctgaggagt  
gggactctTgggttacagggtatatatatgtttcatctTTtaaaaaatttatattatt  
cattTTTTtaagactagtccactggcgcggtggctcacacctgtaatcccagcactTtg  
ggaggccgaggccggTggatcatgaggTgggagattgaaaccatcctggctaacacggT  
gaaatcccactctctattaaaaatacaaaaaattagccaggcgtggTggcaggcgccTgta  
gtccagctactcaggaggctgaggcaagagaatggcgtgaacccgggaggaagagctTg  
cagtgagctgacatcgccactgcactccagcctgggtgacaaagcgagactccatctc  
aaaaaaaaaacaacaaacacaaaaaagactagtcaagggcagtagtgagaagggg  
gaaaagagtagaacaaggagTtcgatctgtaactgactgtgaagtcaattgagataattc  
actacctcagatcagccatgtttcatctttaccagatcacttatatgctttatttct  
ttacttatatactTTTTaatcctgaaagtgttctcaggg

## &gt;IGR2057a

acaacaaaaaagactagtcaagggcagtagtgagaagggggaaaagagtagaacaagga  
gttcgatctgtaactgactgtgaagtcaattgagataattcactacctcagatcagcca  
tgtttcatctttaccagatcacttatatgctttatttctttacttatatactTTTTaa  
tcctgaaagtgttctcagggaacagtggTattacaccagttgttaggtagaagaaa  
tggggTatgtctgcccttacagtgtgacctcccaccttctgtcttcagaacctgtccc  
ctccaccccatagacctgtgccctctggaatccacaggtggccctcagtagcctcc  
ctaccttgacgtTgggtggggggTgggaggaggTcaagaaagagggaagtgaacacaaat  
acaagggtacagagaagtccggtccacaaacctcaatgttcagcagcacacgctgtga  
gaaaggaatgtgcaagctgtTgtggagcatgcctTgggggtgccaaggccactgtgca  
aaggTgtgcttctggacataagtcactccacacaatgctcacccaacctgtgaggtac  
ggtactgtcatccccatgtcacagaatgaagacactgagctgcacggacattgagtgtct  
gtcaatacagtgcaatggTaatagcatgggatctaggtc

## &gt;IGR2058a

tttTggagcatgcctTgggggtgccaaggccactggTgcaaaggTgtgcttctggacat  
aagTcactccacacaatgtcaccccaacctgtgaggtacggTactgtcatccccatgt  
cacagaatgaagacactgagctgcacggacattgagtgtctgtcaatacagtgcaatggT  
taatagcatgggatctaggtctgtTtaaattgggtTtaaattctgactTcccacttact  
agtggTgcagtcacctgggccattactgacttccTtTggTgtcagtttctgcacctgtaa  
aatggggctaattggctcacagggtgtTgagagaggTaaaagatgtaatgtgtagaagg  
agcttagtcaagTgccaagcacagggaacccagTggaactaaaatgagcagagctat  
gaaatgatgaccattatagagtcaaggTtgacagggtggaatggggggTgtcctggca  
agctgggaccaggccaccaaggTgctggtTgtgctatgtgagaatggaatgctggcca



ggtggactctgaaacatggacacctggacagtcctcccactgacctgtccacctttgtc  
cggagctctctacctatctgtggctgcttccaaggacggtgatttctgacagaggcagct  
ggaccttggcacatgcagaagtttcagctcagcatcagtg

>IGR2059a

aggtgctggtttggtgctatgtgagaatggaatgctggccaggtggactctgaaacatgg  
acacctggacagtcctcccactgacctgtccacctttgtccggagctctctacctatct  
gtggctgcttccaaggacggtgatttctgacagaggcagctggaccttggcacatgcaga  
agtttcagctcagcatcagtgctggccttcaggaggccgcaattggcaggcggcagcagtg  
acagccaatgggcagcaaagcttgttgtaaggctactgtgagccttatttggtgacaca  
gggctgacctgcatcacctctgagaacctgggaaacgccaaccacagatgtgaaata  
tgaacatctcaaaaccacaactgcatttcctttgagaaaagattcggctgtcctcctc  
cagcctgcctccctccgctggatgtctttgtacaatggctcactactgcaagaggcaag  
agcctaggtacaagaagagtgctgacaagctagtctgggcaggcctggacagggaga  
gggcaggggctgctgtgcaggcggccccaggaccttaaggacctccaagactccgttc  
acaccagcagctgccaaccttggccaggcctccccaacacagccggaggcctgttc  
ctggccccacttctgcagccttgggaagccggctagctt

>IGR2060a

gtctgctacaagctagtctctgggcaggcctggacagggagagggcaggggctgctgtgca  
ggcggccccaggaccttaaggacctccaagacttccgttcacaccagcagctgccaac  
ccctgccaggcctccccaacacagccggaggcctgttcttgccccacttctctgag  
ccttgggaagccggctagcttgagaaaggcgtgtggcactcatggaggaagtgggcggc  
actggggctctcaccatctgcaccagccacaccgcttcgggtgcagcctggagctcaaacg  
gttggcggtttcagttttcacctcccttgggtgcattctccagcttaccattaaataag  
taaaactgttgctccaccccagacaaatgtgggagggaagtgtgttcaatatttccc  
aaataacactcactgctccctccattcatacagcaccttcgggtctgggagctgtgctc  
acatctgccatctcattacatccttgcaacctggcaaagtaagtactgagctcacacc  
atgtgtcaggacatgaatgaattcacagaattcactgtaattgtccccattttacagaa  
gagaaaatgagacagagaaattcagtcattggctcaaggctcatcacataactaggattt  
ctcccagatggctgagttccaaagtctgcctattctctt

>IGR2061a

atccttgcaacctggcaaaggtaatgactgagctcacaccatgtgtcaggacatgaat  
gaattcacagaattcactgtaattgtccccattttacagaagagaaaaatgagacagagaa  
attcagtcattggctcaaggctcatcacataactaggattttctccagatggctgagttc  
caaagtctgccctatttctctgtacattgcctccatggcacatacacaagaatgagt  
tccatttactgatgagaaagtgaggctgagggtgaaagggtggtgtggggcctgaggtcag  
cgttgcttctcagtcacatctcctcccagaggatggtccaccaacgtccttcatctgc  
cctcccccttataaaaccactgtcagcccgacgggtggctcatgcctgtaatcccagca  
ctttgggaggctgaggtgggtggatcacctgaggttgggagttcgagactagcctgagca  
acatggagaaacccgtctctactaaaaacacaaaaattggctgggtgtgatggtgcatg  
cctgcaatcccagctactcgggaggctgaggcaggagaattacttgaaccaggaggcag  
aggttgcgatgagccgagatcacgccattgcactccagcctgggcaacaagagtgaact  
ccatctcaaaaaacaaacaaacaaacaaacaaacactg

>IGR2062a

ctactaaaaacacaaaaattggctgggtgtgatgggtgcctgcaatcccagctactc  
gggaggctgaggcaggagaattacttgaacccaggaggcagaggttgcgatgagccgaga  
tcacgccattgcactccagcctgggcaacaagagtgaactccatctcaaaaaacaaaca  
aacaacaacaaaaacactgtcatgccccaccgccagcttgtctccctttcttttag  
gtgtggcccacagagctcagtgccctgcctatctggaagaggctgtgaagcccatctatg  
taggtaacggaggcaaaagcaagggttagggagagtgtgcatgtgggacacctcccccta  
tcacctccccactgcctgcacacactggggacagtcaaagcattcctcaggctgggggta  
ggagctgtggcggaagagctggggcatctgttcacagaatcctccctgaagttgctcg  
gaggggctgggatgcagtcacagactggggagcctgatgcagacgcctccctggagcac  
tgtcttctcttgggtcttcaagcctgccctcactcatgaacacatatttttgtgtgt  
acttctgcagccaggcactaccagggcactgtggatgcacagtgaacaacacagacca  
gtccacgcgtcacagactttacttccctgagggaggcag

>IGR2063a

cagacactggggagcctgatgcagacgcctccctggagcactgtccttctcttgggctct  
tcaagcctgccctcactcatgaacacatatttttgtgtgtacttctgcagccaggca  
ctaccaggcactgtggatgcacagtgaacaacacagaccagggtccacgcgtcacagact  
ttacttccctgagggaggcagacattaggcaataatcacatggatctctgaaaacata  
gtcctacgagagggtgcaacttcagggggtcttaacctacaaggagtgtgtgggattag  
ggggtagggcagctgttctaaggatgagacatttcaggtgaggagagggaatgggggtgga  
gttggcagtggggctgggtctcggctcctcccgactgccctccttcccgcatccagtc  
gttcaggaaatctgccgttccatgagagcttcttgggtgtcttccaagctgctac  
caagcgatggcttggcagctgttgccttcagtggttgcctgggtgagcacagccggt  
atgaaatggccagattaatcgagagccaggccctcctaaagtacctctgaaaagagtt  
ttcagcataagcatgacattagcttttctagagaggaaaccacccccggggctgacag  
caagcaggccaggcttaaagggaagcaagtgcagcgtggg

>IGR2064a

ctgttgctttcagtgtttgcctgggtgagcacagccggtatgaaatggcccagattaa  
tcgagagccaggccccctctaaagtacctctgaaaagagttttcagcataagcatgaca  
ttagcttttctagagaggaaaccacccccggggctgacagcaagcaggccaggcttaaa  
ggaagcaagtgcagcgtggggccccctccatgccctgctgcagacaggacacctcactg  
ccttcccccaacatgctccccactcccactcctgcttcttctccctgggggactctcc  
ttgtggaaaagaaaccccaacagtaggggggagcagtgaaactggaaaatgaaactgtga  
tttacagtttcattttccagtttcaatttagaagcagctctgccagctttccagtccccg  
tgctcagggcacacagaggagctgagggggcaggaaaaagtgtccagccagcaagcac  
cctgctccctgggcaccctcagaggggcgggtactggactggtagaaccactgagcaggg  
agttgtgcaatgccgattcctggctctccaggtctgaggccgtacgttggggccctt  
gggtattctgatgcaggtgtggacctcaccatggcagtcgtggcctcagagaccatcag  
aacagctagacacacctgaggcacggcctcatcctctcc

>IGR2065a

cagagggcgggtactggactggtagaacccactgagcagggagttgttgcaatgccgatt  
cctggctctccaggctctgaggccgtacgttggggcccttgggtgattctgatgcaggct

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

gtggacctcaccatggcagtcgtggcctcagagaccatcagaacagctagagcacacctg  
aggcacggcctcatcctctcaagtcacttctgccacagatgctcgggaagtgtctgtt  
ctctgtgcagcatctctgccctcctccatctggtgttgaggcatcttagatgttctct  
gggacctgaggtctgtaggaaaccccggtgtggacttcacacaagggtcgtctttccc  
acactccaggtttccctttaagctgctaattgtaacaggcattcatagaacagaataa  
gatagagaaattctattaaggaacttatgtgcttttgcctgtctgttgcctcatttat  
ttgcaatttatagcctaataccaagaggatttaaggacaattaaatatttcttccctca  
gtgtgtgtgtgcgagtgacgtgtaagagtgtgtaggggtgggtcttccaatgtacctt  
tgcctgggttgaccgtggggggagagggtgggcaggctcagggcctgccagatgtaga  
cctttcctaattgtctacagcaatttgttctcagtgtt

>IGR2066a

cgaagaggatttaaggacaattaaatatttcttccctcagtggtgtgtgcgagtga  
cgtgtaagagtgtgtaggggttgggtcttccaatgtaccttggcctgggttgaccgtgg  
ggggagagggtgggcaggctcagggcctgccagatgtagaccttctaatgtctacag  
caaatttgttctcagtggttctagtatcagttttgatcaatcattaatcaaagttga  
ataaaaagataatcttctcaggactaggctataaaggctcctggctgcaaccttaaaaac  
ccttctgtggaggcctcagagccaagagaaaaggcgatgtgtctgtggctggatttga  
gglaaatgaacgtgctgtccctctctaattggtgtgcacgaacatgaactcagtcactt  
gcgtggctatggcctcttcttcatctctccctgccaacgaagctggtggtgccttggt  
cccaagccagggtggcgaagctggggaaggaggtgtagtgggcccgaatattgggggtct  
gggggcacctccacaggtgtgacctgcagcatgctctggggccaggcctatggcagt  
ggaggcaggacagccccaggaccacagagccccatagtgaggggagccactacttggg  
cggctcagctcattcctgctgacttgcgtgtacagggc

>IGR2067a

ctggggaaggaggtgtagtgggcccgaatattgggggtctgggggcacctccacaggtt  
gtgacctgcagcatgctctggggccaggcctatggcagtgaggcaggacagccccca  
ggaccacagagccccatagtgaggggagccactacttgggctgctcagctattcctgc  
tgacttgcgtgtacaggcagagggtgctgtgagacaaaggagagacacttctccc  
acgagaaataaagcaagcagctgttctctcttggggccagcagggtcagaggctgtgg  
gaccttactccttccctctcagtgagagggcagatctgctcttgggggtgtgaggga  
cagcctcctgacaagctggagaagcaggatttaagagctagaatcaacggagaatgtgag  
gcccagcatcaggttcaagaagcaaggggatcaaggttgggggggaggcaggagcctga  
gcctagcgcagcccagaccaacagactgaggagtccagagagccaacatgctcactcggc  
catcgctaagatgtgtagtgtgtgagaagggtgtgagaggtactcgcgttctctctcaa  
cccttccaacatattattgggtcgtgggtgccatgttttagtagacacataaaaataa  
tgagtatttcagagaagtgaacctggagggtgcagggg

>IGR2068a

aacagactgaggagtccagagagccaacatgctcactcggccatcgctaagatgttagt  
gtgtgagaagggtgtgagaggtactcgcgttctctctccaacccctccaacatattatt  
gggtcgtgggtgccatgttttagtagacacataaaaataaatgagtattttcagagaagt  
gcaaccctggaggtgcaggggagtgtaactcagccatgagaaatcattcaaaggattgacc  
tatggaacagggatagacttgcctccatggctccagcagggaagcagcagagaggggaa

cccttctgaaagtcagtgacatctgaagacacacacacacacacacttttt  
gagagagagaacgagaatgaaaagatacactgatcttcaacagtcgtgtctacc  
tggtgattgcgaatgatttaatttttctcttgcttacagtatttctaaaatct  
ctaaaatacacccaaattactttctgttatggcaaaatagacataaaatgtctacatcc  
attttaaccatttttaagtgcagagttccatagtatgaagtacattctactgttgca  
gccatcaccaccatccatctccagaacttttcatcacctcaacataaaactctgcaccc  
actaagcagtatctccctgttcttctctctccagccct

>IGR2069a

ctttctgttatggcaaaatagacataaaatgtctacatccattttaaccatttttaagt  
gcagaggttcatagtatgaagtacattctactgttgtgcagccatcaccaccatccatc  
tccagaactttttcatcaccctcaacataaaactctgcatccactaagcagtatctccctg  
ttcttctctctccagccctggcaaccatccttctactttctgtctctatgaatttcac  
tattctaggtacctcatataagtgggatcatctggatttttctctctgtctctggctta  
ttcacttagcataatgttttaaggttcatctatgttataacatgtaccagaatttcac  
tcttttttaagctgaattatgttccattgtacgtattccacatattttgtttatccact  
cctcttgtcatggacatctgggtgtttccaccttttggctattgtgaataaactgcta  
caaacactgggtgacaaatacacttttgagtcctgtcttcaattcttttgggtatattc  
ctagaagtgggaactgcgggatcatatgataactaagttttgaggaaccaccacattgtt  
ttcaacaaaggctgcatgtatttacgttcccaatagcaatgcacaagggtatctatttct  
tcacatccttgccaacactattttcaggtgtttttgtt

>IGR2070a

atcacctttagatccctgctttcaattctttgggtatattctagaaagtggaactgcggg  
atcatatgataactaagttttgaggaaccaccacattgtttcaacaaggctgcatga  
ttttacgttcccaatagcaatgcacaagggtatctatttttcacatccttgccaacact  
tattttcaggtgtttttgtgttttaaaatagccatcctaacagatgtgaagtggatc  
ttacttattatggttttcatttgcatttcctaatactaaattacgttttaaaatccaatc  
ctctctgaattgaaccctttgtctttattttctcaataaaatggaccttgccccctttt  
ttccttctttgtacctatgctctgcattttaaaaaattgtggcaaaatacatataactta  
aaactttaccatcttaaccattttcaagtgtagagtccagtattaagtatattcacattg  
ttgtgccctaaccceaataatagatatataatggcaaaaagaacaaaaggctctctaaga  
aaaagaaagccgtgaattcttggaacccagagatgttcacaaacagattggatcaatctc  
agcagggtacatttcattctctctgagcatctctgctgggctgggctctgtgccaggcag  
ggggctccgaggtgagtggtggcctggactctgcccttggg

>IGR2071a

tagtatataatggcaaaaagaacaaaaggctctctaaagaaaaaagaagccgtgaattc  
ttggacccagagatgtcacaaacagattggatcaatctcagcagggaattcattcat  
cttctgagcatctctgctgggctgggctctgtgccaggcagggggctccgaggtgagtgt  
ggcctggactctgcccttgggggttcagcctctgtggggaacagttataccaagggtgc  
tgtgggcacagagggaacacctgttgtgtgggtgcggcattgggaaggggcataagtga  
gtggcacatgagttcagggtgggaaggatgagcagacatgtacatgtgcagagaagggaac  
tggcatgtgtggctgggctgtggcagcacacctcacaaaccgcatcaggagcatctat  
taatcatttatgtctgtctctctacttgattataagctgcatgagagcagggtgtgtgt

ttgttctactgctgcattgctgcatgccagcacaggcaagtgtaaaagaaacacttgc  
tgaataaatgagtgggtgatgacgaggaaaaaggagacatttcttccagaatcttggct  
gtaagcagcagacagcatggctgtactccacggggaaggcaggatggcaggaagcattat  
acaggtgatggagacaggagcacagcaggagccagtggag

>IGR2072a

ctgcatgccagcacaggcaagtgtaaaagaaacacttgcgaataaatgagtgggtga  
tgacgaggaaaaaggagacatttcttccagaatcttggctgtaagcagcagacagcatg  
gctgtactccacggggaaggcaggatggcaggaagcattatacaggtgatggagacagga  
gcacagcaggagccagtggagaagaagagttgaagattccctggttgagagaatggaag  
ggcgtaatgctggggagaggctccctgaagaaaggggagaggctgggatgcaggctcagt  
ggaaggagaggagctccttatgagactcagatggccagtgtgaaaaagacagaagatac  
caactgctggtgaagaatgggaagcacactgcatgggaactctctatactgctggaggc  
gtgttcttctgttattctagattcagacagcactctggtcgtggttggtgcaggccac  
catttgggccaattagaggaacccaataatctgcacttggactatcagaatgagagctc  
tacgccagagcaattccaagatgggcctgaatccatgagtcatggcactaaatggagc  
ccaggggtggctctgagcctaacagcctccaaaatgtcaacttgttcacgtgccactt  
gtccctcatctcatgccatgcagctggcaggacttcagt

>IGR2073a

aacccaatctgcacttggactatcagaatgagagctctacgccagagcaatttcc  
aagatgggcctgaatccatgagtcatggcactaaatggagcccagggttggtctgagcc  
taacagcctccaaaatgtcaacttgttcacgtgccacttgtccctcatctcatgccat  
gcagctggcaggacttcagttgacagaaggtagacctgctctttcaaaaagcacacag  
gacagtgctgataggccagccctccactgagctctagtactgcggtgaacttcacc  
aggaggttcagcacccactgtggctctgctgaggggcctctgtgcactcagtcagg  
cactagcatcccagcggccgagtggtccaactccagactcactacacagagccctt  
gcaaccgatgtgtccaacatggagcccacacagggcagctcagcgtgacacctgcacag  
ctcaagactgaggggaaggaaatgcacttcttctcaagttggaagaggctgtactgaat  
taccaaatggcattatactctctgtgggggagcacagatgagtgccggcagtcctggg  
atgatgttacagtcagaggtggggatgagatgagcccagatgatgaatggggatgcaa  
tcaagacacgatgtcattagaagccacagtgtgttctctc

>IGR2074a

aatgcacttcttctcaagttggaagaggctgtactgaattaccaaatggcattatact  
ctctgtgggggagcacagatgagtgtccggcagtcctgggatgatgttacagtcagag  
gtggggatgagatgagcccagatgatgcaatggggatgcaatcaagacacgatgtcatta  
gaagccacagtgtgttctctcatgccacgtgttccagcttagaggagtaaggggtcaa  
ggaggggggggggtggccccctgggacctgctctaggacgcatgataaggaccacatg  
caaacgcacagaattcaagagctagccaggcctggacccatgtaggagagccccactggc  
tgatttcaatctgggacaaaggccacagacaggaggcctccctggccacaccaggctc  
cccagaacatatgtccactgtccccagtctaaccacaacccatagagctgtgtcca  
ttcatgttggcctagaaactgggaagtacctggcatggggccctccgcttctcccatg  
actgcctggagctctggggagaccaccaaggggccattttgtggttaggaaatgtctgt  
ggcagctgtggacaccacaggccctccctggaccttctgaagtagaggtcacattccta

aagattcttaactgccagctccaattgcttctctgaca

>IGR2075a

tgggaagtacctggcatggggccctccgcttctcccatgactgcctggagctctgggg  
agaccaccaaggggccattttgtggttaggaaatgtctgtggcagctgtggacaccaca  
ggccctccctggacccttctgaagtagaggtcacattcctaaagattcttaactgccagc  
tccaattgcttctctgacaggctcatcttagtagggagtgaatataatctttccag  
ttccacgaggtcctcagatccaaaatgctctaagttcaaaggcaatcatgaagaaag  
ggagacgcagataactaattgtggttttagttcagtggtttccaccttggttacacagt  
agagttacctaaaggagcttttaaaaactcatgtccaaatattccaacaggcacttg  
caaagagaagatctaaatggctaacaacatatgaaaggttgcagctgtattagtcac  
cagggaatgcaaattcaaacacactgtgataccactacataacctgccagaatggctaa  
catgaaaaagatagaaaatatctatggttggcaaaaatgtgaagcaaccagaactctcat  
acattgctggaggagtgtaaatgggtacagccacctgggaacattatttggcataaggt  
actaaagctgaacatactcatatccatgcttcccagcaa

>IGR2076a

accacactgtgataccactacataacctgccagaatggctaacatgaaaaagatagaaaat  
atctatggttggcaaaaatgtgaagcaaccagaactctcatactgctggaggaggagtgt  
aaatgggtacagccacctgggaacattatttggcataaggtactaaagctgaacatactc  
atatccatgcttcccagcaatggatatacatgtactccaaaatacacactagcatgtc  
attgcaatagtcagaatagtccgaattataaataacaactcgaatatccaaaatgcat  
cacagtagaatggataatcgaggaatatccatagagtgaatactctatagcaagaaga  
gtgaataaactgcagctctaagtaacaacttgatgaatcatctcacaacacaacaaga  
ggatatatactgcctgattccattacatcatataaagtttgaaaacaggagaaatgact  
gtacaccattagaagccagaatggacattagcctttggagccaggtagtaagtgaagggg  
gtaccaggggttgctggtgatgttctgttcatgatttggatgctggttactcggggtaa  
attcattttgtgaaaattcactgagctttacacttatggtttgtcttttttttttt  
tgcatatatgtcatccttcaacaaacacttaaaaaatgtt

>IGR2077a

aatggacattagcctttggagccaggtagtaagtggagggtaccaggggttgcgtgtg  
atgttctgttcatgatttggatgctggttactcggggtaaatcattttgtgaaaattc  
actgagctttacacttatggtttgtgcttttttttttttgcataatgtcatccttc  
aacaacacttaaaaaatgtttgaaaaccccatcaattcagtcagactctttgggtggga  
gcaagatccaggcatcagtattttaatatccagatgatgtaatatgcagccaggat  
ttaaagtactggtttaatatcttgggaaaagcagatccactcaagacctcacagggtcc  
tgacaaaggccacttccagctcagtgagtagtgcagactgggggtgggaagatgtccattt  
ttggtatgtgggtcagctcttgcacaggcagaggtattgcagcatgctgttgaatgtgt  
atcttcttggcagtgctgttgaagctggttgcacagtttgaatgggggtgaatgg  
caacaaggtgggcccagccccccagggaagtggatcactgagcacagcttctacagggc  
cattttagagaggtggcagctgggttcccaggggctgccaccagggcagagccagtg  
ctgaggctctgacaacctcggcagggtggggagaaggcca

>IGR2078a

gttgaaagctgggtgcatcagtttgaatgggggtgaatggcaacaaggtgggcccagcc  
ccccccaggaagtggatcactgagcacagctttacagggccattttagagaggtggca  
gtggggcttcccaggggtgccaccagggcagagccagtgtgaggtctgacaacctc  
ggcaggggtggggagaaggccagactcaggggtttatgtttgtgggtaatgacagtcagc  
tctgggtccagatgatgcttactccctggcctctgtgttcagattaggaactgcaaca  
tcttgctgaggaccatgtcaggtcagctctaagtgtgtggctgagaattttccttct  
ctctgtgtggtagtggcagcctccctagcaatggctgacctctagcatactctgtcaaa  
ctacaggcagctgggacaagacaggacatggggctcacagacaggtattccacaacctgg  
gccccgtcaacctcccagaaatgcatgggccatgaacctcctgtgtgggagggggcagt  
gcagagaagtctcaataagcttcttggccctctgggatctccaccatccacagtgtgt  
agggctgagctgcaggtgggtcttcaggtggtgtccctgcacatctgcttgcagcgtg  
gcgtctatagagcaagagtgaacaggaaggggcctcgggc

>IGR2079a

aaatgcatgggccatgaacctcctgtgtgggaggggcagtgagagaagtctcaataag  
cttctcttggccctctgggatctccaccatccacagtgttagggctgagctgcaggctg  
ggcttccaggtggtgtccctgcacatctgcttgcagcgtggcgtctatagagcaagagt  
gaacaggaaggggcctcgggcctcctgtagctctgtgggcagggacgctcgggggcctc  
agctgggcttcttggctaaagggcacagagtggcgtaggctgcaagaggacaagctaag  
ctgatgaaggctctatcactcaagggtagccatgtaaaaaaaaaatccctacaggtaaaag  
aagcatgaataagacaggcggggcataacagtgtctccctactgaagctgcaactctctg  
cttactggcttcagcctcctctctgtgaaatgggggcaatgtcccttaggccttttct  
cctgtccagtagggctgaggggtctacaggccagagggaggcctgggctctgaggcctgtg  
cctgtgtggcctctggctgggacctcagccccatgtgcatgtcacctccttctgtgt  
gaaataccacaacagcagctcttgcagccagtgaactacccttctgttcttctt  
taciaaagcatttatgaaatgcttctttcatgcttcagg

>IGR2080a

ggctctacaggccagagggaggcctgggctctgaggcctgtgcctgtgtggcctctggctg  
ggacctcagccccatgtgcatgtcacctccctgtctgtgaaataccacaacagcagc  
tcttccagccagtgacactacccttctgtgtcttctttacaaagcatttatgaaat  
gcttctttcatgcttcaggaaccgggtggccaggaggagtcttgatttcatttctt  
ccctagagatatgtgtgcttcgaaatacacaataaataaaaaacgagggctgactggga  
ccaggagagtgtgtgcttggccttcccttgatttacatgcttatttcttctcaaatc  
actccagtaagtacagaagtcactaatctattgcctctattatctgcattatagttaaa  
aacatcgacatgaacaacaaaagcccttgcgtagcctagagaagtcacaaagctcacac  
ccagactctgcctaagagagtctctcagggctcactcagggaactatttattcttgttt  
attttttaaatgttgataccctctctgttgagtatccttgttttagatgcaaatcaga  
aaaggtgtgtattgatcacgtcccagcaggaacaaatgcacactccactggtaaca  
ggagagactgaggaaaggaccgttccaagggtgagcaag

>IGR2081a

agtctctcagggtcactcagggaactatttattctgttttttttttaaatgttgata  
ccctctctgcttgagtatccttgttttagatgcaaatcagaaaagggtgctgtattgatc  
acagtcacagcaggaaacaaatgcacactccactggttaacaggagagactgaggaaagga

ccgtttccaagggtgagcaagatgaagagaaacctcaaggaaaggtgaagcatcctgca  
gccagcaacagtgggagctgtgaccaccaatccccaggaggaggtgggagggctcctgg  
aaccagagagacctgtaggaggggactgccggcaggagctgtggttttagggtgaaaaa  
cacaggcactattgacctgagacctggcaaggaggaggagctggggggataaagcacctcc  
cattcccctcccagcctccaacctctggtcaggggaggggtcttcaattggccaaacct  
aactggaagcttggggacctggagcctggctgatggaatccacaaggtcaaactcctggg  
aggagtgaggaaagagcagaaaatcaactggagcagggatgtgtgggggggtggcaaaaa  
acaatccccggcagagtcaccagggtggccattgaaaagagtacatcagaagctaacg  
tgctgtaatgtggcactctcaccacaaatacataggatga

>IGR2082a

tggagcctggctgatggaatccacaaggtcaaactcctgggaggagtgaggaaagagcaga  
aaatcaactggagcagggatgtgtgggggggtggcaaaaaacaatccccggcagagtca  
ccagggtgctgccatttgaaaagagtacatcagaagctaactgtctgtaatgtggcactct  
caccacaaatacataggatgaaaggcagccaggacagaggcggccacgaagaaaggttt  
aaagaatcccagcaaaatgactgggtcctcattatggaagaacaaatagctttacttaa  
taattccaaggtaatagcttaataatccaaggtaaacaagtattttcataa  
ggaggactctgaatgatcaacagaaggttaaatgtcactgtactgcttcacagagctgtt  
acagggcagggaagactataacacaatgtagagatagatccatacaagagaggtacaaca  
gggtttccagttcaacacatcagttatttacactcctagtttcttctcctgaagca  
ccactaaaatgctagtctagaaatcaaatggggccagggtgcagtggctcacgcctataat  
tccagcactttggtaggccaaggcaggaggtcattagagtcagaggtcaagaccagc  
ctgggcaacatagcaagacctgtcttaaaaaaaattg

>IGR2083a

tcagttatttacactcctagtttcttctcctgaagcaccactaaaatgctagtcta  
gaaatcaaatggggccagggtgcagtggctcacgcctataatccagcactttggtaggcc  
aaggcaggaggatcattagagtcagaagtcaagaccagcctgggcaacatagcaagac  
cctgtcttaaaaaaaaaaattggctgggtgtggtgtgtacctggagtctcagctactc  
aggaggtgaggtgggaggtacacttgagcccaggagttgaggctgcagtgagctatgg  
tcacaccactgtactccagctctgggcgatgaagtataccctgtctcttaaaaaaatcaa  
atggggccaggcgcggtggctcatgctgtaatccagcactttaggaggatgaggaggg  
tgattacttgagatcagaagttcgagaccagcttgccaacatggtgaaaccccgactc  
tactaaaaatcgaagtagtcaggcatggtggccatgcctgtagtcccaggtactcg  
ggaggctgagatatgagaattgctgaacccgggagggcagaggtgcaatgagccaagat  
tgtgccactgcactccagcttgggtgacaaggcgagactctgtctcaacaaccaaccaa  
ccaacaaaatggtatttaactctcaaggcaagagagaatgg

>IGR2084a

agtcaggcatggtggcacatgcctgtagtcccagggtactcgggaggctgagatatgagaa  
ttgcttgaacccgggagggcagaggttgaatgagccaagattgtgccactgcactccagc  
ttgggtgacaaggcgagactctgtctcaacaaccaaccaaccaacaaatggtattaac  
tctcaaggcgaagagaatggttaaaggagacatgagtggctgaaagagttcccaaaacta  
caggaaagctgggagggcaggtggaggaataatgactgacatggaggaagctaggctctgaa  
gggcttgacagaggggcacactgacaggaggcaagccactttaccctggaaacctgcagg



aggagctcagacttggggagtgccaggtgttggtgctgggggctgaggtacagcagcca  
gtgggggtaatgaatggaggaaactggtgaaatcctccccaggtctcacctccacacc  
tgccccacacagctggagacaaagacactgaacaggagagagacaggcaggagggagggc  
agatgaatacagggatgaaaacaggaggtgagggaaaagtctgaagaatgaagcgtggg  
actcaatgtcccaccacttaccttgccccgccccaccaggtatatatcactctggat  
gagggtatggtgaatttaaagatggttgcaattcttg

## &gt;IGR2085a

caaagacactgaacaggagagagacaggcaggagggagggcagatgaatacagggatgaa  
aacaggagggtgagggaaaagtctgaagaatgaagcgtgggactcaatgtcccaccact  
taccttgccccgccccaccaggtatatatcactctggatgagggtatggtgaatttaa  
aagatggttgcaattcttgacatttctccaatggagaggtgggtctgtgtctcctcc  
ttgaacctatgtggatttctgactacagtggaaatgagctatgtgactccaaggctggg  
acatacacagccatgcagcttctgtcttgctggccagaacactcacaccagagacttgag  
gtgctcgtgaagaggtccaatgaccaggccatggtgctggagacatcatgttagtctct  
ctggtcaacagtcaccaactgagcccagcctccagctctcttgccaagtgaacaacct  
cttacaagtggacccttcagccccagctgttccaactcccagttattccagtcacctga  
gtcattccagtcacttagccgtcgtagagcagagaattgcccttctgactccttgacag  
tgggccaaaaaatggtgtgtttatgctactaagtttgagggtggtttgtatgtagc  
gttcaataactagaactaggaggtagaatgcttctctga

## &gt;IGR2086a

gccccagctgttccaactcccagttattccagtcacctcgagtcattccagtcactcctag  
ccgtcgtagagcagagaattgcccttctgactccttgacagtggccaaaaaatggtgt  
tgttttatgctactaagttttgaggtggtttgtatgtagcgttcaataactagaactag  
gagttagaatgcttctcttgaggagctgaatggcttcagggtggtggttctcaacagggt  
gattttgtccccaggggacatttgcaatgtttacagacattttggttatcacaactct  
gggaggggggttactactggcatttagtaggcagaagtcactggtgctgctaaacattct  
acaatgcatgagacagcctctgacaacaaggaattctttggcccaacatgctactagta  
caaggttaagaaacctagctctagagaaaaggtgctcattggaggcttgtaactaaaag  
actgtcttcttctgtagtgaacccccagttgataaattctcccaagcagagtttagt  
tcagcctttattgctccattaataataaccaacagatagctgagatattggcatttaa  
ggaaaagcctccaacaaggagagatggagagacagagagagggaagaaaaagaagcag  
aaggaaaaaggaaggaaggattaaagaagggaagaagaa

## &gt;IGR2087a

tgaacccccagttgataaattctcccaagcagagtttagttcagcctttattgctcca  
ttaataaataccaacagatagctgagatatttgccatttaaggaaagcctccaacaagga  
gagatggagagacagagagagggaagaaaaagaaagcagaaggaaaaaggaagaagga  
ttaaagaagagggaagaagaagaacaagaggaagaggagggaagaagaagaagaagaa  
gaaggatgacgacaacgacaacaacaacaagaagcagccaccaccgccgtgcc  
acctccaggtagaacaaaaaataagagactagaagactattaagacaaatggacaa  
atgaaaaataaatagtcccaagaagaataggatggagatagtatatgcataaaaaaga  
atgtggtattttgaaaaagaacagggaagaacaagaatgagtactaggtattagaaaaa  
gaaagccaaaattaaaaaaaaaatcaacagaagggtggagtatgaagtcaatgaagggt

ttccaagaaagtagaccaaaaaggcaagagatgaaaagtaggagagaaaatataagga  
aactaaaacattaatccagatgatccaacagataaaatcacagggaagaaaattattaaag  
aaataatacaagaaaatcttccaggactcaaagatgctac

>IGR2088a

aaaaatcaacagaagggttggagtatgaagtcaatgaagggttccaagaaagtagacca  
aaaaggcaagagatgaaaagtaggagagaaaatataaggaaactaaaacattaatccag  
atgatccaacagataaaatcacagggaagaaaattattaaagaaataatacaagaaaatct  
tccaggactcaaagatgctacataactcagcagtgacgaatatgtccacattcactattg  
agttaaccacagattgtgttatgttcctattggaaggatggagagaggaaaagtggggat  
ggttctgtagaaagttcaatcctcatctatcacagaagtcaacaaatgcctaaaatcg  
gtagatcaaaaaatagtataaacagaaatggaaactagtaaatggtgaaaagaggcagcc  
tatagagagggggagtgagaaaggcggggaagggtttttattatgggcttctcagtaca  
actgatatttaaaccatatgcatgcattttttttttttttttatggatacataat  
aattgtagatatttatgcagtgcagtgtgatgttccagacatacatatagcatgacatg  
atcaaatcagggttaattagcatatctatcaccttaaacacttgcatttcttgggtga  
caacattcaaaatcatctcttccagctattttgaattgt

>IGR2089a

gcatgcatttttttttttttttaattggatacataataattgtagatatttatgca  
gtgcagtgtgatgttccagacatacatatagcatgacatgatcaaatcagggttaattag  
catatctatcaccttaaacacttgcatttcttgggtgacaacattcaaaatcatctc  
ttccagctattttgaatttgcattttttgataaattgatagaatagaattaattt  
aaaagggtacaattttaaaactgcaatgtgatgggatcaaatttaataatttgaaaaatt  
cgcttatgtagaagagtcagcctctctaagaatgctcaatgaactggcataggtgggca  
caagcaccatcagcatggaagggttccctctgatgtcactggccactaaggcagttgggtg  
gggtgaggggtgggatgagagccaggcatggcagcccttaggtggcaccatttcctct  
cctggcagcctgtatttgcctgggagacctatcttgggtatagatcctattgggctgc  
taaagaagagaggtgctaactcttttaggatgacttctgggaattcaccaggatgcctg  
cctctcctactctggacatggaaaaaatgctgggtttaccaaggtggatgagtcaggc  
ccaggactagagccacggggcctctccctggacgtgccat

>IGR2090a

ttgggagacctatcttgggtatagatcctattgggctgctaaagaagagaggtgctaa  
tccttttaggatgacttctgggaattcaccaggatgcctgcctctcctactctggacat  
ggaaaaaaatgctgggtttaccaaaagggtggatgagtcaggcccaggactagagccacggg  
gcctctccctggacgtgccatagtcaggctgtctcggcagctaaaaggctacacacat  
ttattgtcatcagaagctgggacagatgagccttgggttacaagatctcctacctggagc  
tctccgggaggtgccaatcataggggatgggaggacaaacacatgcttgggtgggctcc  
agcgttaccgccaggtgcatctccttggccactagccctggggtctgacctccccctt  
cttttcttcaccattgtctcctattcctttcttccacctctctcagttctc  
cagagctctgtgcagggactacttagcaaactacctgctgaaatgcactgttttttt  
ttaaccttttaattgtcacttttttaactataccatccttagataagcaggagata  
ttcctttagaaaaataagaaaatattaataatcacccatgattctatcagtcagaaaac  
tccactgctggtgtatgaatttccagaatgttccaggct

>IGR2091a

tacttagcaaacttacctgctgaaatgcactgttttttttaaccttttaattgtca  
ctttttttaactataccatccttagataagcaggagatattcctttagaaaaataag  
aaaatattaataatcacccatgattctatcagtcagaaaactccactgctgggtgatgaa  
ttccagaatgtttccaggcttataaacgggtaaaaatactatcacagtccatgtctcat  
ctaagcaccagctactgagcaatcatcacctactgggctgtgctgaggcctttagatgt  
gttaatctctttaaactcctccaacttcacaagataggtgtattgtgccccgtttacag  
gcaggaaacaagttcaggagatcacattaattgcctgagttccaagttggttaagaga  
ctaagctagatctcaacccctcaggctgaatccaaagctactttccttgaatggtttgta  
agattttccatttctttttaaaaaatgggtatgttcaaatacttttcatcaataaa  
tatttatctcatcattcttctaataacattcccttgatgaatgtccaatgtggaat  
aaccagttccgtcttgttgggctttcagatgttttcttttgaaatgataaacaatgca  
gtataactatctttatatataaactttgcaatagtatga

>IGR2092a

ttaaaaaatggatgttcaaatacttttcatcaataaatatttatcttcatcattct  
tcctaataacattcccttgatgaatgtgccaatgtggaataaccagttccgtcttgtg  
ggcttccagatgttttcttttgtaaatgataaacaatgcagttataactatctttatat  
ataaactttgcaatagtagtattttcctagaataaatactggaaagtgaattgcgt  
ggtaaaaggccagacacatttttaaaagctgcctctttccaatcacacatttccacat  
ccatttatttgcctgaggatcttcacaaaattggactgagattaaacacagaatcagaga  
agccctatgctggaagatcttagtatatacctcttgaactaaaccagttactttaga  
aaaaaaaaaaaaaggccaggcgcggtggtctatgcctgtaatcccagcactttgggag  
gccgaggtgggcggatcatgaggtcaagagattgagaccatcctggccaacatggtgaaa  
ccccatctctattacaaatacaaaaattggctgggcgtggtggcgtgtcctgtagtccc  
agctacttgggaggctgaggcggaagaatcgttgaaccgggaggcagaggttgcactg  
agccgagattgtgccactgcgttcagcttggcgacagag

>IGR2093a

gaggtcaagagattgagaccatcctggccaacatggtgaaccccatctctattacaaat  
acaaaaattggctgggcgtggtggcgtgtcctgtagtcccagctacttgggaggctgag  
gcggaagaatcgttgaaccgggaggcagaggttgcactgagccgagattgtgccactg  
cgcttcagcttggcgacagagcgagactccatctcagaaaaaaaaaaagccctagacc  
tctgcagcagcctgctgtgccttcagtgaggccaggcagcacttctgggcaagtgaggaaa  
gggagacccggaggagggttagggaagtgagggcaagagggccatgctgtgggcccacaac  
caactggcttggggaggctgtacattttccaagtgaacactgtcttctgagtcta  
aagacctcacagccatcactgactatactgagctgcctcactgtccccaggactctcact  
ctatccagggaagtcaacgcaaagtcttgggccttccctttatccagctgccaacactt  
agcaccctggtcttcttggacagtttccaaggctacgttgggcagtcaccaacaagatg  
tggtcttattgtgtcttacccttgggtgtgttttcccaataggctacaaactctggcac  
ctgcaaaaaacaaggaaagtaaatgattgaagcagggcac

>IGR2094a

aaagtctcttgggccttccctttatccagctgccaacacttagcaccttggcttctctt  
gacagttccaaggctacgttgggcagtcaccaacaagatgtggtcttattgttctta

ccttggtgtgttttcccaataggctacaaactctggcacctgcaaaaaacaaggaaag  
taaatgattgaagcaggcactgaaggtgggccttgaacaacgcaagcctggatggaag  
ttgaaagatgagagcccatctgtggtgagttcttgaagctgctgaggtgtgagttggt  
aggatgctggcccaggcagacacgggcacaaagcttccaccagcggcattctccactca  
gagggtttcttctcatttggcctgttaatgctcctatactggcagaaacctcagtgcc  
ttcccactttgtctcaaggccttgataaaaaataagttgtcccttcattcattccatg  
gatatatccattcatcagctatttactgagcacctactatatgccaggcactgtcctagg  
gctctgggaatagagcattggactaaaaaggctaacaccctgccctcatggagcttgaag  
tctactgggtaggggggtggggcgggtggtgtagtgaagagtccaaaaactaacaagata  
cataaattaaaaatataggaatcagaagtggtaaatccta

>IGR2095a

tatttactgagcacctactatatgccaggcactgtcctagggctctgggaatagagcatt  
ggactaaaaaggctaacaccctgccctcatggagcttgaagctactgggtaggggggtg  
gggcgggtggtgtagtgaagagtccaaaaactaacaagatacataaattaaaaatatagg  
aatcagaagtgttaaatctaggaggaaaaataaggcaggagagagaggttaagggaata  
ttggggcagaaggtgagaaggcgtgtaaaaattctaaaatgtgtgtccagagaaggctag  
acacctgagaaggttaattatgaacaaagtacctgaaaaaagtgaggacatgagccctg  
agaattaacggggaagaagcttcccagggtggagggaatggcaagtgcacagcctggcag  
cgagggcctgtctgacatgttaacagataagtgaggagggtggtgtagccagagtagaga  
gaataagggaagaagcaggagagggatcagagaggtagcagagggtccacagtgttcacg  
gcattcaaggagggtcctgtgtgaacttgggctctgattctgagacaggagccactaga  
gggtttttacagagaagtacatgatgtaactcacatttaacaggatcactctggatg  
ctgtgttgagaataaactgagagaaagagtagaaccagtt

>IGR2096a

gagggatcagagaggtagcagaggctccacagtgttcacggcattcaaggaggtcctt  
gtgtgaacttgggctctgattctgagacaggagccactagagggtttttacagagaagt  
gacatgatgtaactcacatttaacaggatcactctggatgctgtgttgagaataaactg  
agagaaagagtagaaccagtttagagggtatggcagaaatcttggcaagagacaatggtg  
gcttggaccagagcagtagcatggaggatttctgatggattggaagtgagagattaaaa  
agaatgggtttagaacctgactggggcagggttaaaaagaaaggagctgaagctgtgaact  
aggagacagagttggctgggagcagcaggaagattcccagtttggcctgagcaactggg  
aggatggaattgccattttctgaatggaagcgtacagatggagcatgtttgtggggaga  
taagggaatacggttttggacgtaagtgtgagatgcctttaagcacttaagtggagaaga  
ctgtaggcaggtggaactgtgaatctggggagaggtccaggctggaatgagtatttgtg  
agttctcagcacatagttcttaagctgtgacacaggatgagatcatcaagagggtgga  
tgtcaatagggaagctgtcggccgggtgcggtggctcacg

>IGR2097a

cgtaaagtgtgagatgccttttaagcacttaagtggagaagactgtaggcaggtggaactg  
tgaatctggggagaggtccaggctggaatgagtatttgtgagttctcagcacatagttc  
tttaaagctgtgacacaggatgagatcatcaagagggtggatgtcaatagggaagctgtc  
ggccgggtgcggtggctcacgcctgtaatcccagcacttgggaggccaaggcgggtgga  
tcacctgaggtcaggaggtcgagaccagcctggccaacctggtgaaccccgtctctact

aaaaatacaaaaattagctgggtgtgggtggcaggtgcctgtaaccccagatactcaggag  
gatgaagcaggagaatcacttgaacccagggaagcagaggttgagtgagcggagattgtg  
ccattgtactccagcctgggtgacagagcaagactctgtctcaaaaaaaaaaaaaaaaaa  
agaaaaagaaaagaaaagaaaagaaaaaaaccagggaagctgtgcaaggggctgagc  
cccattcagtagctcagcaaaagagactgaaaaggactagcaagtacagtaggagggaaa  
cctggagaaagacttctgaggaggatggcatagtcactgtgatagatcaactattta  
aatatgaagacagagatttagcatcttgagtcacaggtg

>IGR2098a

aagaaaaaaaaaccagggaagctgtgcaaggggctgagccccattcagtagctcagca  
aaagagactgaaaaggactagcaagtacagtaggagggaaacctggagaaagacttctga  
ggaggatggcatagtcactgtgatagatcaactatttaataatgaagacagagatt  
agcatcttgagtcacaggtgatcctggtcagggatgattcagtggaacagttggagtga  
gaatctgactacagcaggttctaagagaggagctgaatttgggagctgaggatggagt  
tggtgtgacagcagggggctggagcagaggagaggatctaactacattggttc  
caccttaagagaaaacacaaagctggtacttctcaacacctgtacgtggccgctgtgt  
tactaacactggccaggtcctccagctgtgagcaccaccaggtctggtcctataag  
ctagctctccacctgttctagattcctatgaagtatttcttttctactgctgtgt  
gtagccttaggataaatgccatagcttggggctgctgagcaagtcctcagttgctgtt  
gaccaagatctggcttgggtcctttctcctaaggggaagtcagagtgaaggggactct  
gctcttgatagcttgccttctgtgcaggagataaataat

>IGR2099a

tagattcctatgaagttatttcttttctactgctgtgtgtagccttaggataaatgc  
ccatagcttggggctgctgagcaagtcctcagttgctgttgaccaagatctggctggg  
tcttttctcctaaggggaagtcagagtgaagggactctgctcttgatagcttgcct  
tctgtgcaggagataaataatcaccaaggaaatggatatgcaggcaggttaacttcagatg  
cagatgggtgctatgaagacagtaagctgggtgaaacacacagagtaagtgtgggagcg  
acctccttgcaggtgtgtggtcaggtgcctcctctgggaggtgacatttaggatgac  
acctagacagcgatgccagcttatttctcctcaagctggcctcctctgctgctccag  
ccttccccgtggcttctacaatatctgcactctgggaacaaggccaaggccttgggcca  
ctaagtgcaaagccaaaaggaaacaatccttctctcgaatacacaccatgggaact  
tttctccatgattacaaaatagctgcatttctactgaaggaaacttgaaatattgaaa  
acaggagaaaacgtgtcatttctactaccagaaataactacaattaactttggatgcatc  
cttctagacatttctatgcatatatataggtattttt

>IGR2100a

gaaacaatccttctctcgccaatacacaccatgggaacttttctccatgattacaaa  
atactgcatttctactgaaggaaacttgaaatattgaaaacaggagaaaacgtgtcat  
tctactaccagaaataactacaattaactttggatgcatccttctagacatttctat  
gcataatataggtatttttcttatttcttgggttaaaaatgagatcatgtacatt  
gtgtttatgatctgaatttctactaaatctgtataaagcacttctcatgaaattaa  
tttcttctacataatgagttaaatggctgcattaaaagtatttcattatgtagatt  
ttaccataatttttaattcctaataacattggccatttacattgttctctatgattgt  
actaccagcaaatgctctaataacaatcctgtatatatttcttggagaagggggttg

ccaatctcttatttcttgggttaaaacaaaatgtcactgcccagtggcagtgccatggg  
tctcatggcagcctgaggctgagggcatgggagggcaggaatgagcccaagcctaagga  
gccactcagatgccagaggctgatttagtctatgacatgccaggtcttgagtttctc  
ccctgagggcctgatcagtacgaaaacaataggcctctcc

>IGR2101a

ggttaaaacaaaatgtcactgcccagtggcagtgccatgggtctcatggcagcctgaggc  
tgagggcatgggagggcaggaatgagcccaagcctaaggagccactcagatgccagagg  
ctgatttagtctatgacatgccaggtcttgagtttctccctgagggcctgatcagt  
acgaaaacaataggcctctccataaaccagagaaatccaaggggattcccacctcag  
caggaagaggggtgtcactctctgaccccaagaatagagaccacctccatcctccttga  
tccctgggggaagcttctcctgccctccctccctggggaaaacattggcacggtcaggcc  
ttcaatctctcttggggaggggtgccagggaatgtcaggaaacagaaggtccatag  
gaatagcagggcctgtctatccctgaccagcctttccctaaatcctcaattccca  
caggggctggcagggacagtgctatgctcccgtagaggatgtcctgagggctagttagt  
tctagggtaaggtgggagggccaccagatgaggggttgatccaggctctgacattccagc  
ctcgtcttgggcaagtgtacacctgtggaatgtgagctacgaggaaggaacttagatt  
tgcggcccttagcattcaacaggggctctataaataccag

>IGR2102a

tctatgctccccgtaagaggatgtcctgagggctagttagttctagggtaaggtgggagg  
ccaccagatgaggggttgatccaggctctgacattccagcctcgtcttgggcaagtac  
ttacacgttggaatgtgagctacgaggaaggaaacttagattgcggcccttagcattcaa  
caggggctctataaataaccagggcaggccaatgcatgatcctgtctgagcctcagctgct  
catatgtgaaatggatgacacctatctcacagggttggttagggactaaatacaactta  
atacagttaacactctactgtttgagaaacattagagtccaaagccctggagggctactt  
ccaccacgccccatgctttagtctcctcttttggcagaactagttacctccacact  
gtactaccacacctagacatacctctggtgtagtatgcagcacattgtgtgtactt  
gtccaactcctccatgaagcttcagggcagttaaagacaagaatttgcctctctatcgt  
ctgtgcctctgaatgacactatgaagtaagcaagggcattattccattctacaaatgag  
aaaactgagggctagaagattagatgccttggccaagtcacacagtggagagtaggaga  
gcaagacctaaacctgggtctcatttctgggcctgtgttc

>IGR2103a

cttcagggcagttaaagacaagaatttgcctctctatcgtctgtgcctctgaatgacac  
tatgaagtaagcaagggcattatttccattctacaaatgagaaaactgaggcttagaaag  
attagatgccttggccaagtcacacagtgagagtaggagagcaagacctaaacctggtt  
ctcatttctgggcctgtgtctgtaaaccaaaaagaaaattccaaggcacccccagctg  
tctgaatagacctcctctcggccaagggcattccaaagttaacctgaaaaactagttt  
aggccatgatgggaagggggagccagacatgcctcgttataccctcttcccttttggaa  
tactgactctttaagactgataagagatatttacagtcattctctgaagcctgctac  
ctggaggcctcatctgcataataaaaccttggtccccatagccccttatcgttaaccaga  
cattccttctgtgttctattgataataactttcaaccaattgtcaatcagaaaa  
atthttgaatccatctatgacttgaaccacccccactcccaacctagtgtcctgcct  
tttggacagaaccaatgtacatcttatatgcattgattgatggctatgtcctccataaa

tgtataaaaccaaattgtggcctgaccactttgggtacat

>IGR2104a

ctattgataataactcttcaaccaattgtcaatcagaaaaatgttgaatccatctatg  
acttgaaccacccccactccccaacctagttgtcctgccttttggacagaaccaatgt  
acatcttatatgcattgattgatggctatgtctccctaaaaatgtataaaaccaaattgtg  
gcctgaccactttgggtacatgttctcaggatctcctgagggctgtctcacaggccattg  
gttacttatattggctcagaatagatgtcttcaaataatttacagttgaccgacaact  
ctattctagatgattctcttgcaaaagggagttggaggtgagaaggaagtgagccaattc  
tcatgtccctgagaaaaaggcaggcagagcttcgagaggaaggaggtgcttggggaggca  
gcaggacactgcacttgcctcagccccatcctgactccccgtggatcatcgtgcatgcag  
cagctgtgacccccagaggcctctagttcagcataagctgaggcaaaagggggccccagg  
ttccctctactggtgtggagcccgccggaaggggactggggatcgccggccagagtt  
gattgttggccccagcagcaggatgatggctgtagagcacctgctcaggagttggcct  
atctccagctatggggcgggaaggctccctaccagaccac

>IGR2105a

cctctagttcagcataagctgaggcaaagggggccccaggtccctctactggtgtgga  
gccagccgggaaggggactggggatcgccggccagagttgattgttggccccagca  
gcaggatgatggctgtagagcacctgctcaggagttggcctatctccagctatggggcgg  
gaaggctccctaccagaccacacacatcttgatgtactaccctgtgagcccaggacccc  
tgtgatacctgctgagggtgaaggctgaatgagtgagagctcccagcctccagcatcaggg  
cattagggagaagaagcagctagactcaagccagggtgagagggaggggaacaggcatc  
aggtagtaggtgttttaatgtcacctacctcttattatgttgtatgttctggaggatgg  
gtccatggctgatccatccttgtgtcttactacaaccagcagattactttacagagagt  
tgatactcagtaagtacagcttattgaagggtgaacaaaagccagtaggcaggatgaca  
gatggcatccgccttgcattgtctgggtcatcagggaaggccaatgtccagtgtgtcct  
gaccaggatgggttctgacaaggacatccatagcatccacagagggtgtccctccccagg  
caacaaactctccctccctctcttcttcttctccctt

>IGR2106a

cttattgaagggtgaacaaaaagccagtaggcaggatgacagatggcatccgccttgcatt  
gtctgggtcatcagggaaggccaatgtccagtgtgtcctgaccaggatggttctgaca  
aggacatccatagcatccacagagggtgtccctccccaggcaacaaactctccctccct  
ccttcttcttcttccctcttcttcttcttcttcttcttcttcttcttcttcttcttctt  
tgcagtggcacaatctcggctcattgcaaccttcgcctcctgggttcaattgattctctg  
gcctcagcctccccgagtaactgggattacaggcatgtaccaccatacctggctaattttt  
gtatttttagtagatataggcttttgcacgttggccaggctgggtctcaaactcgtgacc  
tcagttgatctgccttgcctgggctcccaaagtgtctgggattacaggcatgagccaccgc  
tccagcacactctcccttcttagccaaaagagacaccacttggaggaaactacctggat  
ctaggtgcttccctagtgacaaaaatggactggggatgtgtgtataaatccttggccctgg  
gaatctggaaggacatgatgatgagaaaaacaaacaaacaaacaaacagaccaatta  
tctctttattgagacaaaactgctgcttttgcctgaatg

>IGR2107a

tcttagccaaagagacaccacttggaggaaactacctggatctaggtgcttccctagtga  
caaaatggactggggatgtggtataaatccttggccctgggaatctggaaggacat  
galatgagaaaaacaacaacaacagaccaattatctctttattgagacaaa  
actgctgcttttgcctgaatggtcagattgactgattcctcttccacttgcacccccac  
tgcattgcatggctacaaataatcctgatgttgacatttaaaatagtgcttgcctaac  
tgcttcagtctatcagtgtaaactgtgtctcccctggcagggtatgtgtgggggacagt  
cagggtgtgtctgttaggacaaactcagtatgaactatcacctgcctgtgtgtacag  
ctttaagcttcaggtagagggtgtataaacctggagtaggacttccctagagaacagg  
tcattacactatgtccatctattgagccctaaattaagtctacagaattaggcctaaac  
tccgcagacagtagccaaaggctcaggtctgcccactccacctgtccatccacacct  
ccttctcatcttggccttcactcactaacacagtgccaaaggagatgcagttgcctg  
gacaggctggctttggcttaagctaggggttcttaaagaa

>IGR2108a

tattgagccctaaattaagtctacagaattaggcctaaactccgcagacagtagccaaa  
ggtctcaggctctggcccactccacctgtccatccacacctccttctcatcttgccttc  
actcacttaacacagtgccaaaggagatgcagttgcctggacaggctggctttggctt  
aagctaggggttcttaagaatagtcctccagaccagcagcatcagcatcacctgggact  
gttagacctctgaattggaacctgtgggatgagactcagcaaaactgtttaatgagct  
tctaggtgattttggtgcactaaagtttgagaacctgggtgagccattccctgagcc  
caggttgctttctcagccattttctgcctattataatctcaaccaccttcaaagtca  
gtcaataaccatctcttttgggaagccccctagtcccccaagtactgtgaaggcctct  
tcctgaaccgacagcttctttgtcaccccatccccattctagtgaagaccttcattt  
ctgcttctctttgcagcatgtattttctgctttgtttatagtaaactttgagcagttgt  
taactgccttccacactgattcccccttaacacacaaatgttactctgtaaaggccatg  
tcttacttcactcattctttttattttttatttttgaaa

>IGR2109a

tttgcaccccatccccattctagtgaagaccttcatttctgcttctttgcagcat  
gtattttctgctttgtttatagtaaactttgagcagttgttaactgccttccacactg  
attccccctaacacacaaatgttactctgtaaaggccatgtcttacttcactcattctt  
ttttattttttattttgaacaaggctggctctgtgtccaggctggagtgcagtggc  
atgatgttggtcactgcaacctctgactcctgggctcatgtcatcctccacctcagcc  
tcccaagtagctgggattacaggcctgtgctactgcgccgggctaattttgtattttta  
gtagagacagggttccccatgttggccaggctggctcggcttagactcaagtgatccg  
cccaccttaacctcccaaagtactgggattacaggagttagccactgcgcctggtgcaat  
ttgctcattctttgaataaatgtccactgaggatctgctctacatggcgggggctgtgct  
aggcactgggggtcagacaaagggtgcaccttatacttatcatccaggagccagtgggg  
gaatggcaagggtggctggcaattgcaatactttgagtagcactgagacagaatgctcca  
accacagggggccccctcatgccccctcctgttgggaccc

>IGR2110a

atgtccactgaggatctgctctacatggcgggggctgtgctaggcactgggggtcagaca  
aagggtcaccttatacttatcatccaggagccagtgggggtgaatggcaagggtggctggc  
aattgcaatactttgagtagcactgagacagaatgctccaaccacagggggccccctca



tgccctccctgttgggacccacccaaaaagtaacctctgttctaacttccatcaccaga  
gattaattttatctgttttgcctttgtttgagacagggtcttgttctgtcgtccagga  
tggagtgcagtggtgcgatcatagcccagtcgagcctcaaacgcctagactcaagcagtc  
ctcccacctcagcctcttgtgtagctaggactacaggcatgtgccaccatgccagctat  
ttttttttttaagagacagagtcttgcctatgttggccaggctggctcctaaactcct  
ggctcctcaagcattcctcctgtcttgacctcccagagtgtgggattacaggtataagcca  
ccgcacccggccaattttattgttttaaaactcatataaatagaatcataaatgtac  
cttctgggtgtctggcttctccactacacattatctgtgcgatccatgtatgtgtta  
tgtatagacacagttgttctttttaagattgctgtgtt

>IGR2111a

gtcttgacctccagagtgtgggattacaggtataagccaccgcacccggccaatttta  
ttgttttaaaacttcatataaatagaatcataaatgtaccttcgggtgtctggcttc  
tccactacacattatctgtgcgatccatgtatgtgttatgtatagacacagttgtt  
ctttttaagattgctgtgttgcctcctgtgtatgatgacacaatttaaccattct  
actgttgatggccatttgccttcttagttggggctcttatggagaaagataactatt  
agacataagacaaaaacatttggttatgtccgtggtggacattctggacattcgac  
tcattcctcttgagtatgtacctagagggtggaactgatggttatggaatgggtatagtc  
ttagcttttagtagatactatcaaatagtttccaaagtattgtaccaatgtacactcct  
accagcatataaaagtgttggccaacatttggatcatcagcttcaattttagctcttc  
ctgtgggtatagagttgtatctttacgttttaatttgcctatttggctatttataatcc  
actttaagatgttctgtttaagactttgcctatttgccttttctatttacttaca  
ggaattcttggaccttctggatataagccccagtcgtct

>IGR2112a

tggcaacatttggatcatcagcttcaattttagtccttctgtgggtatagagttgta  
tcttttacgttttaatttgcctatttggctatttataatccacttttaagatgttctgt  
ttaagactttgcctatttgccttttcttatttacttacaggaaattcttggaccttct  
ggatataagccccagtcgtctgtcggatattgtacagagaatatcctctccttctccagt  
ctctggctcgccttccactaggtttttgttttttttctgagacagagtcctcgtc  
tctcaccaggctggagtgcatggcatgatctcggctcactacaacctccacctcccgag  
ttcaagtgattctcctgcctcagcgtccgggtagctgagactacaggtgccaccacca  
tgcccggtaatctttgatatttcagtagagacgggatttaccataattggccaggctgg  
tctcgaactcctgacttgtgatccgccatctcagcctcccaagtgcgggattacagg  
tgtgagccaccgcaccagacgccttccactcttaattggtattttgatgaacaaaag  
ttcataaatgttcaatttaccatctttcatctatggctagtgtatcctgcttaagtaa  
tcttagttccaagaagtcagttaacagaaataacaaaaa

>IGR2113a

gatccgcccctctcagcctcccaagtgcgggattacaggtgtgagccaccgcaccag  
acgcctttccactcttaattggtattttgatgaacaaaagttcataaatgttcaattta  
cccacttttcatctatggctagtgtatcctgcttaagtaatttagttccaagaagtc  
agttaacagaaataacaaaaattactaatattaaaaaagacaaagaagtgaaggaaaaa  
ttggatggtgggtgtgggagaaggactgcatcagatcgtgagagtgtgtcacttgactg  
tgctgtgcaaaagccgggcttgcctgtgtgtgtgtatggatgggagctgaacccccag

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

gcagtgaacaaacatgccctctgtttggttcagatgctgcgccaggtggtggaaagggc  
tctgtgggctgtagggggaccctggctcaatggcttaagagaaagatcactcctttcat  
gtgtgtaagctgggtctgaccccaaacctggagactccctttagtcaggccctgcg  
cctctgtgccagagcctgcaaagacagcagtgctgacactgtccagctggctcacaag  
gggaaattctcccctccttgagtcaccacatagacaggaggagcttcaaataacaagcgc  
tcgactccaaacgatccctatgctcatttcacgatgctgc

>IGR2114a

acccccaaacctggagactccctttagtcaggccctgcgcctctgtgccagagcctgc  
aaagacagcagtgctgacactgtccagctggctcacaaggggaaattctcccctcctt  
gagtcaccacatagacaggaggagcttcaaataacaagcgtcgcactccaaacgatccct  
atgctcatttcacgatgctgcacacttcaaaatcccctgtgatgcttgtatgaagt  
ctagatccagaaactttcccctgtttcccagtttgagtagaacaataccctgggagt  
cacaagctacatcatacaattgacttccctaaaaaaaaaaaaaaaaagagatcttggga  
ctcaaggttatgagtttgagtgctcctttgcagggtcttttaaatcccctagtggcata  
gaaactctggatgtttgtaatttctggggaagggtctatgtgtgccatcagattcc  
ggaagggtgtatgacctcaaaaaaggtaagactcactggaccgagtcctttaaagga  
tagtttgagtcctctctgtgggaggtgatgtagtaggcttgccaagaggacctcaa  
cctaccagatggatgcgatctgccatccacctccccagcataaagccagttcataaagcc  
agctccagcatctctggggcagttttcttcccacccagg

>IGR2115a

aaaaaaaggtgaagactcactggaccgagtcctttaaaggatgtttgcagtccttct  
gctgggaggtgatgtagtaggcttgccaagaggacctcaacctaccagatggatgcgat  
ctgcatccacctccccagcataaagccagttcataaagccagctccagcatctctgggg  
cagttttcttccatccagggtcaagctcttgccggcttagagatgcagtgccagtc  
caacaccatggctgtgtgctcactgcagatgaaggcatactttttctaggacgtgcagt  
gacccacttggcagcagacactcatttctgatatgtttgtatgccaagtcttgggtaa  
acaactaagtatctttaaaggaccaggttctttttgtccctgttcttggccctca  
ccaccacttttccatgtgccacctctcataagaactcagaagccagggtggagtaa  
agggtcttttaaatcccctagtggcataatgaattctggatgtttgtgaatttctgg  
ggaaagggtctatgtgtgccattagattctggaagggtgtgtgacctcaaaaaagggt  
aagaccactggaccgagtcctttaaagggaagtgcagtgatcagtttgataaaatta  
attatagtaatatgagctatgtatcttagctaactgcact

>IGR2116a

tagtggcatatgaaattctggatgtttgtgaatttctggggaagggtctatgtgtgc  
cattagattctggaagggtgtgtgacctcaaaaaagggttaagaccactggaccaggt  
cctctttaaagggaagtgcagtgatcagtttgataaaattaattatagtaatatgagctat  
gtatcttagctaactgcacttcaaaaagacatctgggaagggaacgcttaactaaa  
attattattataattattttttgagatggagtattgctcttgcgccccaggctgg  
agtgaatggcacgatctcagctcactgcaacctctgcctcccaggttcagcaattctt  
gtgcctcagctcctgagtagctggaattagaggtgccaccaccatgccagctaattt  
ttgtatttttagtgagacagggttaccatgttgccagggtgtctttaaactcctga  
cctcaagtaatatgccacctcagcctcccaaggtgtgggattataggcatgagccact

gcacctgacctaaaattatatttctaatagacaaaactgaggtacagctcataactaaata  
ggggagaatgacattaaagccactcccatactaaaaagaccaattttctggtctaga  
tggcttttagaggctcctggagcaggaacaaggggtag

>IGR2117a

ctcagcctcccaagtgtgggattatagggatgagccactgcacctgacctaaaattat  
atttctaatagacaaaactgaggtacagctcataactaaataggggagaatgacattaaag  
ccactcccatactaaaaagaccaattttctggtctagatggcttttagaggctcct  
ggagcaggaacaaggggtagtgactacgatgtgtcaaaagagacataggcatttctcag  
ataaacctcagctcttccggcttgagagaaggaaacattccaacatgacttagggggccc  
aaggacctgtttccacctcatatcagattgtcaaatgggaagggtgtgcctagggcaca  
cactccctccgaaagggctgagtcccagaagacctatgtctgctccatcctgggtccc  
tgctctctcctggagacaagatacagctgcctgtatgagtagcagcttggggcctcctcc  
tccctcccttgcgccacccactcctcctgccgccccatacacactgggttctcc  
tcccctgctctctcaagaagccaggccctgccccactcacagtcagaaggaagtga  
ttctgaaggcctcccaggactcccaggactggctcaaggcatcagactgttaaataag  
tgggatttttcagtgtttgtagaactgtgtttaaaaa

>IGR2118a

ccactcctcctgccgccccatacacactgggttctcctccctgctctctcaag  
aagccaggccctgccccactcacagtcagaaggaagtgattctgcaaggcctccagg  
gactcccaggactggctcaaggcatcagactgttaaataagtgggatttttcagtgttt  
gtagaaactgttttaaaaagatgaaccatccaaactgtttatgaacccttgggaag  
tctcaacagatatggttccctatttataactgtggccaggactttaaatacaagtga  
gggggactgtcaaaatcagagaggtgtcacgttacagttgtatgcttgataactgaat  
tcagtatttgcctcaatttgagaagttcttttattcacttttctcctttctggtt  
tctcttcttgttgcactgctgtgcaccatacactcctgacattttctgagaacatc  
agaactatttctggaagtggagggtcaaaataggggttttagaatgaccaaataata  
tgaactactaaaattcattcaaaagcctaggactagtctattcactgataattcctagtc  
tacaagggtaaacatagctgtctctcgcgcagccctacacctgcaggggcctgctc  
tgtctctgggtgtccgctctggaggtaggtgtcagacca

>IGR2119a

ggaggttcaaaataggggttttagaatgaccaaataataatgaactaaaattcattt  
caaagcctaggactagtctattcactgataattcctagtctacaagggtaaacatagct  
gtcttctgcgcagccctacacctgcaggggcctgctctgtctctgggtgtccgct  
ctggaggtaggtgtcagaccacctgggtcactttcctaggtccaatctctggatctatg  
gcaacagaatccacaggtccctattccatacagggggaatgcaaagtgtgggggaca  
atcagagtcaaaagctgagatctgggcttcttctagagccattctgaggtcttcacac  
tcactaacaatccaactaaaacctggctctttaggaacacatcctcttcttattag  
ggaggctgttctctgagttaacatagtagcagtttcgttcacagatcttctggcaaaaa  
agaatccgacgagagctatgcctccaccaaaggcacagtttgataacactttggggaagg  
atggttcatagctcctgaagaagaagagctctgtgataagaacctctggcccacaggctt  
cttcacactacacaacttccaaaatccctaaccactgctaatagctaggaggagtagt  
gactgttccaacacaaaagagatgacaaacatttgagatg

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

>IGR2120a

gcctccaccaaaggcacagtttgataacactttggggaaggatggttcatagtcctgaa  
gaagaaagagtctgtgataagaacctctggcccacaggcttctcacactacacaactc  
caaaatccctaaccactgctaatagctaggaggaggatagtgactgttcccaacacaaag  
agatgacaacatttgatgggtgatatgctaattaccctgatgtgactatacata  
atatgtattgaaacatcattatgtaccttgtaaatagtataatcattataacacacaat  
atgaggtcccagacaatgataatacataataattatacgtttatgggatacatagtgatg  
tttcaatatgtataaattgaagtgggtgaattatgtataaatttaactacattaaaaa  
ttacagaaaaataaattttaaaaacaaaaacaaaaaattcttaactgctgtcaagcta  
gcactgacaaccgaagcctcagcccagctacctccctgcttccacctgtgctgaccacct  
aagagagaaggcagaggcacacagccctacatcttggtggggaaccctagggttctc  
ctgagggcctgacagattgaagggtgaaaatgagtgagggtgtggccacctcagctc  
tagcctcctctgctgagggacagtggccaaggaacatcc

>IGR2121a

cagcccagctacctccctgcttccacctgtgctgaccaccctaagagagaaggcagaggca  
cacagcccttacatcttggtggggaaccctagggttctcctgagggcctgacagattg  
aaggggttgaaaatgagtgagggtgtggccacctcagctctagcctccttctgctgagg  
gacagtggccaaggaacatcctcatagatccaaaggaaggtggagagtcctctttgtcc  
tctccaccacctcatccccaccacgacctgatgtcactccctgctgtaccaccccgga  
aacccttagccacttcccacaggtccactcccagggaagttcttaattggtggatgtgg  
gaaagaggaagaggaataatcatttctaccttccaattccctgtatcccatgagcct  
ccagctgaaaatgattacccatctgacctggagctctcatcctaggtatcataatggct  
cttcttttaccataaggagaatgggtaatgaagaaatgcaaaatcccaactcatgaaaa  
tgtggttgaaaaagggaagaccataaaaagtctcatttgttgaccagagacaataaagt  
gattacttaaaaaaaaaaaacccacctctggggcttttccaaatcatggagaaaaataa  
aaacaggggaagacatgctctagtcttaaaactccaatgt

>IGR2122a

gaatgggtaatgaagaaatgcaaaatcccaactcatgaaaatgtggttgaaaaagggaag  
accataaaagtctcatttgttgaccagagacaataaagtattacttaaaaaaaaaa  
aaccacctctggggcttctccaaatcatggagaaaaataaaaacaggggaagacatgct  
ctagtcttaaaactccaatgtggccccagactggtgagccccaacaacagtaaatacca  
ccctcagcagccttctgcccacctcaccacccaatactaggtcccagacaagtcaacaa  
acacttattgacatgtactgtgtgcttccaaccattccgggagtgggaattctgcaacc  
tcaaggtgcttgcgaggagcagggaacagctcagtcacatttactgtgtgctgacgt  
tttgctaggttagaggaggcaaaaatctgagaaaaaacagtaagaatactccaatct  
gggaagtactaatatacatagcaccataggagcaaggaacaattaattctacatggtg  
aggtcaaccagagaagatgatttttaagttgggccttgaaagcacattaggatttctg  
ggtataactgggaaggagtggcattccaggcagaaagaactgagtgagcaagggtcaggg  
ttgggggttggtatgggcagttggttgatgtgatacggcg

>IGR2123a

atagcaccataggagcaaggaacaattaattctacatggtgaggtcaaccagagaagatg  
atttttaagttgggccttgaaagcacattaggatttctggtgataactgggaaggagt

gagcctccaccaaaggcacagtttgataacactttggggaaggatggttcatagtcctgaa  
gaagaaagagtctgtgataagaacctctggcccacaggcttctcacactacacaactc  
caaaatccctaaccactgctaatagctaggaggaggatagtgactgttcccaacacaaag  
agatgacaacatttgatgggtgatatgctaattaccctgatgtgactatacata  
atatgtattgaaacatcattatgtaccttgtaaatagtataatcattataacacacaat  
atgaggtcccagacaatgataatacataataattatacgtttatgggatacatagtgatg  
tttcaatatgtataaattgaagtgggtgaattatgtataaatttaactacattaaaaa  
ttacagaaaaataaattttaaaaacaaaaacaaaaaattcttaactgctgtcaagcta  
gcactgacaaccgaagcctcagcccagctacctccctgcttccacctgtgctgaccacct  
aagagagaaggcagaggcacacagccctacatcttggtggggaaccctagggttctc  
ctgagggcctgacagattgaagggtgaaaatgagtgagggtgtggccacctcagctc  
tagcctcctctgctgagggacagtggccaaggaacatcc

ggcattccaggcagaaagaactgagtgagcaaaggtcaggggtggggttggtatgggcag  
 ttggttgatgtgatacggcgtgtagtcaggccagtggtgccagaacacggggtcagaga  
 gcaagagcaaaggaggtgaaggtctaaaggcaggtgcagtttatggcagccacgaacaca  
 tgccattcaaaggacctgttgcattggagtgagacagctgacaggtgcagcctcggatc  
 cacaccattcaagtcagaccatgttgcctcctgggtggccccagccaatgacagaacat  
 ggcaggggtgctcgggcctgtccatttctgcccaggtgcgactcttctcctgggcaatc  
 tttggctggaactccccactgggctcgttgagacactttacagccgcatcacagtctga  
 tgctctttcaacagaattatccttccctcttgcgtccagagttagatctggactgca  
 gtctgaaagctgtcttttctcctgacttctgctcctttctcctttatctttcataggc  
 attagctcttcttaccaccaataaatcttctgcacttttc

>IGR2124a

tgggtcgttgagacactttacagccgcatcacagtctgatgctctttcaacagaatta  
 tcttccctcttctgcgtccagagttagatctggactgcagtctgaaagctgtcttttc  
 tctccgacttctgctcctttctcctttatctttcataggcattagctcttcttaccccc  
 aataaatcttctgcacttttcattctgttttgggtgtctgcttccagaggactccaactg  
 agaaggagcttagatgaatgtttgggttttctgacagtgaggagccactgaggtatctt  
 aaacagggcaagccatggctcagatctgagttcataaaagcaattctagcactaggggtga  
 agagccgggggggtggggagacaggggaagcaacaggcaatgaaaagaccatttaaaaggac  
 actgcactgattggtacaagggttcaacaaggggcaactggaagtatacaacttacta  
 tgatataccctttaaactcaacagctcattgttagaaatctatttatagaacactag  
 cacaatgcataaaagtataaaaatgaggatgtagtggcctataaatattatcaggacat  
 tgaaaaactttgtggtcatctgtaggggaggagatgaactagcagtagcatctacgtggtg  
 gaatacataccaagcagccttataaaagaagacagcaggt

>IGR2125a

aacagctcaattgtagaatctattttatagaacactagcacaaatgcataaaagtat  
 aaaaatgaggatgtagtggcctataaatattatcaggacattgaaaactttgtggtcat  
 ctgtaggggaggagatgaactagcagtagcatctacgtggtggaatacataccaagcagcc  
 tttaaaaagaagacagcaggtctctatgtactgtcatagagaaatatacacaatagactg  
 ctatttgaataaaagccggttgcagccgggagtggtggctcacgcctgtaatccagcac  
 ttgggagactgaggcgggtggatcacctgaggtcaggagttgagaccagcctggccaa  
 catggtgcaaccttgtcttactaaaaatacaaaaattagttgggcgtagtggcgggtgc  
 ctgtaatccagctacttgggaggctgaggctggagaatcgcttgaacctgggaggtgga  
 ggttgtagtgagccaagattgtgtcactgcactccagcctgggcaacagagtgcagctct  
 gtctcaaaaaaaaaaaaaaaaaaaagccagttgctgtacaaagtatatagcatgctccc  
 attttcatgaacaaagctgtgcatactgatatattataaagatccacatttgtgtataa  
 ataagctctggaagagatatatcaactgttgacagaggtc

>IGR2126a

tgtgtcactgcactccagcctgggcaacagagtgcagctctgtctcaaaaaaaaaaaaaa  
 aaaaaagccagttgctgtacaaagtatatagcatgctccatttcatgaacaaagctg  
 tgcatagctatatattataaagatccacattgtttgtataaataagctggaaagagata  
 tatcaactgttgacagaggtcacctctgaaggtggtagggcttacttttactttct  
 atgtgtgttttttttttgggtgcttttctataatatatttctacttcttaaatgat

gaagatggttcatttcttattcagaacacaaaattttaatttaaaaagcttcatatcta  
cttagaaaaccatataaaaattctttatattgtattccagagaagaataacaaaaatc  
tcctagaatcggttagagggctgtcagcggcctggctcggtaaagagaaattagagatg  
agttggaatagagccgaacacaggggtggaagacagaagttccagaagaagccaagagt  
gctatcttgagtagtgggcaggtgaccacagaaggcggtgggtgggaagtaggagtga  
gaggggtctgtgctgaatgtgccagccttcaggaggctcaggccaggacaggggtataa  
acaagaggtgacgctggctcctgctttagaactcaggaga

>IGR2127a

acaggggtggaagacagaagttccagaagaagccaagagtgtatcttgagtagtgggc  
aggtgacccacagaaggcggtgggtgggaagtaggagtgaaggggtctgtgctgaatg  
tgccagccttcaggaggctcaggccaggacaggggtgtataacaagaggtgacgctggct  
cctgctttagaactcaggagagtattaggcctaaacacttatgacctacaaaagattaa  
aaacttaccacagtactaccaatggactaaaacgctaattgtaaacagtgaagtcatt  
gaaaaaccagaaaaatattggtgaatacttatctaaggggggaagaatttggataaaag  
agcaaacagcattttaagaaattttagccatattaaaaacaaacaccaagactttaaaa  
acagaactcataaacaatacaaaagacaagcaaaaacaaggaattatattacagcaac  
actgacagaaaggacatgtccttcataataaaaaacatatggttgggtgtggtcatgc  
ctgtaatcccagcactttgagaggccagcatgggtggatcacttgaggtcaggagttga  
gaccagcttgggcaacatggtgaaaccgtgtctctactaaaatacaaaaatttagctggg  
catggaggcttgcgcctgtaatgccagctactcaggaggt

>IGR2128a

ccttcataataaaaaacatatggttgggtgtggctcatgcctgtaatcccagcactttg  
agaggccagcatgggtggatcacttgaggtcaggagtttgagaccagcttgggcaacatg  
gtgaaaccgtgtctctactaaaatacaaaaatttagctgggcatggaggcttgcgcctgt  
aatgccagctactcaggagggttaaggagaatcgttgggaattgaggaggcagagttt  
gcaatgagctgagattgcaccactgcactccagccaaggagacagagtgaacttcatat  
aaaaaaaaagcaaaaaacaaaacaacaacaacaaaacccaaaaaacacagatgagt  
ttgtaatcagtaataaaaatacactctccaaagaaaaacagcactggagctgggcatggt  
ggatgtgcctgtaatcccatctactcagggggccaaggtgggaggattgcttgagcca  
ggagttcaaggccagcttgggtaacacagcaagatcccatctctataaaaaataagttag  
ccaggtatggtggtgcacactttagttctagctactctggaggctgaggtaaaaggatt  
gcttgagcccaggagttcagggtgcagtgaactatgattgtccactgcgtccagctct  
ggttgacaaagcaaggccctgtctcttaaaaaaagaaaga

>IGR2129a

ggtaacacagcaagatcccatctctataaaaaataagttagccaggtatggtggtgcaca  
ctttagttctagctactctggaggctgaggtaaaaggattgcttgagcccaggagttcg  
aggctgcagtgaactatgattgtccactgcgtccagctcgttgacaaagcaaggccc  
tgtctcttaaaaaagaaagaaaaacagcattgattatggtattgtattata  
aacattattttgattggttagaattttgttcagttacataaaacagaaaacaatagtg  
cttaagcaagatgggattttcttctctcactgaaaaaaaggcttagaatgatc  
agttcagggtggttgggtgacttcaggtgtcaccaggacactacgcttcttctggctca  
tcttgccttattcctaaagtgcagctctcattctcatgtcttggtagttgtagagt

gatatgcaccacatcctcatttaagaaagtaggatggagaaaggaggggtgaataaagggc  
acacccctcctgttaaggagctggcttcgaagtccecatatgacacccacttgcacccat  
tgtccggaacccagccacatgatcacactttgctgcaaaattgccaggggaacgtagttt  
tcagctgggtggaaaagggatcagcaaaaaattggttttg

>IGR2130a

tttaagaaagtaggatggagaaaggaggggtgaataaagggcacacccctcctgttaagg  
agctggcttcgaagtccecatatgacacccacttgcacccattgtccggaacccagccaca  
tgatcacactttgctgcaaaattgccaggggaacgtagttttcagctgggtggaaaagg  
atcagcaaaaaattggtttgttactaagaaagagggaatggatactgtagagcaatgag  
cagtttctaacatacatgtgaacaaaattatcaaaagaaatacaaatgtaaaagattca  
gggtcaaccttaccacagtcaaatataagtaaagcaggtggccttttatggtctgtct  
ggctaaggtattgaagagctggccagacaagtcataagacagtcagaactgactgtct  
tcataaggaccgactgtctcataagaacctgggacaatgcacatgaacagaacagagt  
ttcagggtaaaaatggccctttctcccaactagatggctcaaggacccaagggccactt  
cctggctgttccccaaagtctccctccaactcccaagtacatcagattctgtaaatgc  
tggaagtagagaaaaattctgtaccagggattctctaactaaactatggctaaaatta  
aattttagtggttttgaaagttccttaaaaaagtaata

>IGR2131a

tttctcccaactagatggctcaaggaccaagggccacttctggctgttccccaaag  
tctccctccaactcccaagtacatcagattctgtaaatgctgggaagtagagaaaaatt  
ctgtaccagggtattctctaactaaactatggctaaaattaaatttaggtgttttgaa  
agttcctttaaaaaagtaatatcctcatgcaaaactgaatcagcagttcagaacttaaaa  
aaaaaaaaagaacctctgtctgtattcttggggtatcacaattaacatgaaaaccagcc  
actaaaataaggaccagtggttggatactacatgggggtgatgttaggcaacctcaagtt  
atgtcttttggcagattcaggactttatgtgagctcccacagatgggtgatgtcaatgcc  
ccaccttcagaaggcacagagaaggaaagtgcagaggacacggcaagtggtgattccac  
aggcttctgaagttcataggcctattttgaatagtattgtgcctttctcaatccagacc  
agcatcagttacctctcacgatttttgaagcatttacttctagtgtttgctctttt  
aaatggttgctgattgggaaaaataccagagtaaaactgatgttcatgaagtctggggga  
gacgatcttagggcatgggaagcaatatgatataatgac

>IGR2132a

gcctattttgaatagtattgtgcctttctcaatccagaccagcatcagttacctctcac  
gatttatttgaaagcatttacttctagtgtttgctcttttaaatggttgctgattggga  
aaaataccagagtaaaactgatgttcatgaagtctgggggagacgacttttagggcatgg  
gaagcaatatgatataatgacgaaacgtgccatgctttggaatcagaacacctggatt  
tgagacctagctctgtggttaccagctgtgtgttctgggacaagtattaaacttctct  
ggggctcaggttcttcttaaatgagtggttaatacagtgcttacctcgttgatcatca  
agttgggttaggaacagatgggtgaacttgactgggactgtttacaaaggtgtggggagg  
gctcagggaatatcaagatgagacagtgagcatatgggggctagcaacaatggggagctg  
ttaccactgtaacctgaaggtatgaaggaagggaataaatgggtaaggggacccaaagg  
aggcagctattggaagggtgtctggcaggagctgtgggctccagtgaggatgcagttgg  
cctaaagcgacctgatagggacccgggggaataacttaaccactgcctcctcggggaa

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.





gacatattcatcttgattttaatgccatccggcaaaattcctggcactcagagggcatgc  
aataaaactttactgaatgaaggtttagcgcgtaattcagaaaataagcaagaaagtgc  
acaaacaccaaagcaagtaaccaagctatatgttctagaacatttctcctcctcctg  
tactctggctcctcgcgcctacagcagacaggacagagtctgctctttcacctgctct  
ttctagtcttttcttcaggtatcccctgaaatgccacttcctcagaggctatcctga  
ctaccaatccaaagcagtcactcagtcacttgattacacttcagtcctatttaattgt  
tagagagcacttactgctagcaccaatgtttattctgtgtttctttctatctccacc  
attatgctgtagctccatttgagcagggaccttgctgttctactactgtatgccagcat  
ctagtacagtgtgtggcagagagtcaagtgttcattaaatacttgtaaataaatgcatg  
ccactgttactgcatgctgagtttaattgatgtatggcttctatcactgctatcagatta  
ggtgctctagagaaactcagaaaggctgagtcctcttatgacattgcagggtgggagggg  
ggacctcagttcccttcctaggcctaagtgggatatgctg

>IGR2137a

agagtcaagtggttcattaaatacttgtaaataaatgcatgccactgttactgcatgctg  
agttaatttgatgtatggcttctatcactgctatcagattaggtgctctagagaaactca  
gaaagggtgagtcctcttatgacattgcagggtgggagggggacctcagttcccttcct  
aggcctaagtgggatagctgcctgcttcagcttctgtggcctggacttccccatgg  
aggccagatgctgagcaacccagcccatgtgtctgaaggctctgaataccgaaatgttc  
ctctagctttctgtgagagcagttggagctgccattgcctacactgatagaggaatgtg  
cccagggtcctggctggcctggcaccagcaggaggcaggcacagtggccagcacgggtg  
aggacacatcacacttcttctttccatctcctatgctgagagtgcagtcagctgcc  
tggttgggagcagaaactggcctcactttctggggcctgctgggcagacaatgcagctct  
ctagctgtgccacagaacaggcgaaatcttactagctgtggactcactccctgcccctc  
ccattcctgcagaaatgctctaccagctcagcagagggccaggcttggaatctctcacc  
tgtccttgcccttctttaaagccctctggttactggaa

>IGR2138a

gcctcactttctggggcctgctgggcagacaatgcagctctctagctgtgccacagaaca  
gggcaaatctttactagctgtggactcactccctgcccctcccattcctgcagaaatgc  
tctaccagctcagcagagggccaggtctggaatctctcacctgtccctggcccttcttt  
aagccctctggttactggaaatcataaactgtgagacacagcctttatcacaccctgaa  
cagttcactcttaataatttaagtctggaggctaaaacaaccaggggacactggaggcctcc  
tgcttactctcagtgactgatgtttgcacctggtaattgaggtcaggttgcttctcttaa  
gtcatatgatttgcgtcaaagcaggaaggtgtcggggccacttggtgcaaagagaccagg  
aggcgatcccagcaacgctgcaaaccagcttggcagcaaaggctgtgctttcatgggag  
ccagccctaggagtggtgagctgggctggcagctggttaataaccctctcggggcctgaa  
taaaccctagcttttctcactcacagcaactcaggatgccttctcctctctaaagacctg  
ctgaattgagtcactttcaatcttcttgagtaggatggggcattagtaattaacaaa  
ttaattaagcatgctaaatagtcacccagaagatactggt

>IGR2139a

gctgggctggcagctggttaataaccctctcggggcctgaataaaccttagcttttact  
cacagcaaacctcaggatgccttctcctctctaaagacctgctgaattgagtcacttca  
atcctttctggagtaggatggggcattagtaattaacaaattaattaagcatgctaaat

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

agtcaccagaagatactggtcacttaagggtctccaaatcacagtataggtcccacct  
accgagacacctaatactgtttcagggttgccttgacctcaggcatttatctcctgggtg  
tcattggaatctgtcagataaacagcagcacaccaacctggccccctctgccagcctcaga  
tccttctaaggcagtgaggctccctgggtggccaccagccaccggggtccaggcagccca  
acacacactcccatgctgagggtctctcgcgatgacctctctagggcacacagtaggtgtca  
gtaaatgctgtggcatgaaggacctcctggagtgtctgagttctcaggctcaaggccc  
ctagataagcagatttctctcccctatcaccatagtcaccccagggactgcagggcagggc  
cgaaatcagccagtgactcagctccttgggcaattcagctggccacagaccacttctc  
tgctccccagcgccggatggatgcagatctgtgagtaagg

## &gt;IGR2140a

ggaccctcctggagtgctctgagttctcaggcctcaaggccccctagataagcagattctc  
tccccctatcaccatagtcaccccaggagctgcagggcgaggccgaaatcagccagtgcactc  
agctccttgggcaattcagctggcccacagaccacttctctgctccccagcgccggatg  
gatgcagatctgtgagtaaggagccagctgcaggcaagcagctcgagggcgaggtgggcat  
gatgtctggctaccactcgcactggacgccacacacagccagggtggcagaaggcccc  
acctgccatgtgccagtgggacaccacctcatggctctgcgtttccaggtttccaactaa  
ggactgagcacactctcaacatggacctcctaactgctctcgaggatggacagctggcct  
caagggaacactgcaaagtggctctaggaagaagccactgtccctccagaccataaaaat  
ggctaccaagggcagagccagcagctttcgtgtaaagtttctcaagaaaatcacagata  
ttccccctctgtgatgttcagctcagcctggaaaggaggtgaagaaagaccagactacctga  
tctctcaaggtcacaaattcaaccactgtcctgtttaaaagcgggtagtagacaggcca  
gtctgggctctggaatgagacatgtgaagccccgggtctgc

## &gt;IGR2141a

agcagcttgcgtgtaaagtctcaagaaaatcacagatattcccctctgtgatgttca  
gctcagcctggaaaggaggtaaagaccagactacctgatctctcaaggtcaccaat  
tcaaccactgtcctgtttaaaagcgggtagtacagaggccagtggtgggctctggaatgag  
acatgtgaagccccgggtctgctgggtctgctgcacggtagcagtgtagtcttaggcatta  
ttgaaactctgtttcaaatctggttatgtgaatgaaaggggctaatttatgtaacactt  
ttagtatactaagccctcaatatagtttagctacttaactatgtcttctttgaaggacg  
ctgaactaaacagaagagaaaacagggaaataaacagcatggcaacctacatcaacagaaa  
cttaattattcacctggataactgagtggtgagtgtagtgcataaacaatatagca  
aagagaagtttgagatctttggctcagtcattctagaatcctgagtcacagcaaatgcac  
agcctccatgaggctgagccacacatgaaagctgcttccaccacagactggtagagggc  
actgacatgcttaacgatgatgatgataaaaatagctaccacgggctaccacgtgca  
cacacatgttaagcagttcaaacaggttattttgttaat

## &gt;IGR2142a

tggtcagtcattctagaatcctgagtcacagcaaatgcacagcctccatgaggctgagc  
cacacatgaaagctgctccaccacagactggtagaggccactgacatgcttaacgatg  
atgatgatgataaaaatagctaccacgggctaccacgtgcacacacatgttaagcagttc  
aaacaggttattttgtttaattcataccacaaatctttgaggttaagtattctgttcccg  
ttttatagaggtagaaactgagagttgaagaggctgaataatttctcaagcacactcca  
actcgaccacccacaagcaaaaaggcagagctgggattcaaacacaggtatgactgtgtg

tggacatctccccgtgctatgctccctgaaggaaaattctaagtgtgtgtttctggg  
agaaatctacctgtgtgtctttaacctactctgacaggagcaagggccaccactctgt  
atctaagaccactgggaacagtcttcaggcaacaaggtgaccagggcagctgcagagggt  
atctatgcccctgccccctagcgcaaaagtctgtttctctttccaaatggcccgtggga  
gcaactatttagggagaccatacctcctccacactcagttcccaggcctgagccacaga  
gtcctgccacaggaggaggacctgcctgtcctgctccct

>IGR2143a

agtcttcaggcaacaaggtgaccagggcagctgcagagggtatctatgcccctgcccct  
agcgcaaaagtctgtttctcttccaaatggcccgtgggagcaactatttagggagacc  
atacctcctcccacactcagttcccaggcctgagccacagagtctcctgccacaggaggag  
gacctgcctgtcctgctccctccccactccaggttctggaggcctctgtgatgattccc  
caggaaggactacaggatctggcaggcagcaggtggcgggtgggaggaggagagtcctggg  
agcacagcactcctaacccccctgctcctcacagaacaaaggaggagtcattgccatgtc  
ccctgctcccacaaatgccccaccagaggggctaatgcctaggattagggtcttgtgt  
gctgaggaaagtctgtcccccaatccctacaaaagccagaaccagctactaagggtta  
gacacagacagaactgtctatattaacatttctcctaaaaaacaggaatcctgggg  
aaagaccactggcctgggactccatgagccctggcttctatctctggctttatcaggtga  
ccacaggcaagtcacctagcctccatgggtctaggccctcctgcctgttggtgggaatca  
ttacatatcacaatcattacagctgaccttcaggagggt

>IGR2144a

atattaacatttctcctaaaaaacacaggaatcctggggaaagaccactggcctggga  
ctccatgagccctggcttctatctctggctttatcaggtgaccacaggcaagtcacctag  
cctccatggtctaggccctcctgctgttggtgggaatcattacatatcacaatcatta  
cagctgaccttcaggagggtgtactctgggtcaggaattgttggtgcattatcata  
tttattctcacagcaccctttgcagtagctactatttcataccattctcagatgagga  
aactgtggaacaggctggttaggggacatgccccaaagtgacaaacttagcaaaggtggac  
ctggcactcagtagcacatctgttttccatgctcttaaccactgtaacatacagagccc  
ttttacagagatcaaggacagaggtaaaagtgtttgaaagcaaaaaaaaaaagcgggg  
aggatgcataaaataaacataatcacccctgccccgccagacataattcagggaaga  
gtcctaaccccccaagaaccttctgtggaacttattcgcaacatcagagacctccaacata  
gaaatgacctcaataagtcatttcttctccttcttcccttcaggcaggaataatata  
actaactgaattatacaggtgagaccacgaaggtcaagca

>IGR2145a

taaatccccctgccccgccagacataattcagggaagagtcctaacccccagaacc  
ttctgtggaacttattcgcaacatcagagacctccaacatagaaatgacctcaataagt  
catttctttctctcttcccttcaggcaggaataatataactaactgaattatacagg  
tgagaccacgaaggtcaagcaagggtgaccagcttagccccgtggtggcaggttaaggag  
gagactgacccagcctcctggctcctaggggaggaaacagtgtatgacaaaggcccctt  
gcatggccaaggtggagccctttctaccaaagttaaactgttttagtataatatccaagt  
gcatctttccaaccttaaaaacatatattaatttcttataaagctggttggcactctcc  
tcctctccaaagctctgtattaggcagggttcattgttagacaacagaatgaacagt  
ggttagttcagccagaaaagggtgatataaggaggatactgggttgatcaaaggctctct

gggagggctgcagatttagagccagtcagccaggaacgatgcctgaaacataccttagag  
ctggagaagaacaaaaccctacctttctcaatagctggcaaggtggcaaggtctggcc  
ccatgcagcctgggctcttcccactctcctctcctctaa

>IGR2146a

gggatgatataggaggatactgggtgatcaaaggctctctgggagggctgcagatttag  
agccagtcagccaggaacgatgcctgaaacataccttagagctggagaagaacaaaacc  
ctacctttctcaatagctggcaaggtggcaaggtctggcccatgcagcctgggctctt  
cccactctcctctcctcaatgcgttgccctactcgtgcttcccaggcaatcccacct  
caggtctatgaacttgccattcctctgcctgcaacctagacattcacattgctagctcc  
ctggctagctcaaatgccaggtttctgcacaaatgctcctccttagagaggccttctgg  
acctctaggtctctggccctagtactctatcccctctcctgctttcctcttacttca  
ctgctccttaacattgtgttatacattgtctgtctcccaactggaatgtaagtggcacc  
agggcagggacttggtgtttgttcttgcgtgaagcccagggcccagggccagacct  
ggacaattaggtgctaagttattgtgaatattctatgaaggaatgacaaaggaatgc  
ataaagaacttcaaagtcaactctcgaacttcaaacttcaaactcccaactcctctg  
cctatgctggacgattagggcagtaacaggagtcacttg

>IGR2147a

ttttgttcttgcgtgaagcccagggcccagggccagacctggaacaattaggtgctaag  
ttatttgcgaatattctatgaaggaatgacaaaggaatgcataaagaacttcaaagtc  
aactcctcgaacttcaaacttcaaactcccaactcctcctgctatgctggacgattagg  
gcagtaacaggagtcacttgcgtgctgctgcacctgacctggatccgcatcagccctg  
cagctcccactttggaggagacttgcccagggacctacagctctgaagcttctgacag  
cctctgcagctcttggaaacttatctgggctgctgctgctgcagaccatggatgcgtagctg  
agttcctgccccgtgatttcttagagtctcagaagacagggaagtgacttaccacaaagtc  
cccttcacctataaacagttcagcccaggagtgaggctgacacgcaaatgcagctat  
gtatagactcagagtcaccaaaggtcagggctgggtggagccttggtcacatgcaggcca  
acctgtgctggagataatgcaagccagtcaggggttagcgtgtacatggactctggag  
tctggcagatctaagccccaccaccaacctgtgacctggagaattatttgaagagaca  
ttattgaaaagcagatgtaaatggaataaaaagttcct

>IGR2148a

caaggtcagggctgggtggagccttggtcacatgcaggccaacctgtgtctggagataat  
gcaagccagtcaggggttagcgtgtacatggactctggagtctggcagatctaagcccc  
accaccaacctgtgaccttgagaaattatttgaagacattatttgaagcagatgt  
aaaatggaaataaaagttcctattttaaacagtcagttgtccccattcagaagcctatt  
acagttgtccctcagcatcttcaggaattggtccaggacgctcctcagataccaaaa  
gccacgatgctcaaattccttataaaaagtacgttagggctgggtacaatggctcgtgcc  
tgtaatcccagcactttgggagaccgaggtgggcagctcacttgaggtcaggagtcaag  
accagcctcgccaacatggtgaaaccccgctcctctaaaaatacaaaaaataggcgggc  
ttggtggcatgcacttgtagtcccagccactcgggaggtgaggcatgagaattgcatgg  
atccgggagggcggaggtgcaataagccaagatgcaccactgcactccagcctgggtga  
cagagtgcagcttcatctcaaaaacaaaaacaaacaaaaaatgtgtagcacagtc  
agccctccgtatccacaggtccacacagaaacctgctgg

## &gt;IGR2149a

gtcccagccactcgggaggctgaggcatgagaattgcatggatccgggaggcggagggtg  
caataagccaagatcgcaccactgcactccagcctgggtgacagagtgagactcatctc  
aaaaacaaaaacaaacaaaaaaatgtgtagcacagtcagccctccgtatccacagg  
tccacacacagaacctgctggtatggaggccaacctgcttctattctttttttt  
tcttgagacagagtctcactctgtcaccagcctggagtgcagtggcacaatcttggt  
cactgcaagctccacctcccagggtcacgccattctcctgcctcagcctcctgagtagct  
gggactacaggcacagccaccatgcctggctaattttttagtagagaagg  
gttcaccatgttagccacgatggtctcctcctgacctgtagtccaccgctcgg  
cctcccaaagtgtggattacaggcgtgagccaccgcgccggccacttctattcct  
atggtatcaaattcaaactccttgcttagatgcaaactctcaccacgactgaaatctg  
gttaaccaacctgtccaatacatctctgcactcctccaaataatgttcaagtggac  
ctaagtgtccctagtcttctcacacctgtgtgcctgga

## &gt;IGR2150a

tacaggcgtgagccaccgcgccggccacttctattccttatggtatcaaattcaaact  
ccttgcttgatagtaaaactctcaccacgactgaaatctggtaaccaacctgtccaat  
acaatctctctgcactcctccaataatgttcaagttggacctaaagtgtccctagtct  
tctcacacctgtgtgctggaaacaccaccaccttcttctctcatctgaatttacta  
gagccccagaggcaggtctcatagtcttccctgacttgggttttttggcactgactact  
gggcattcatgatgggacctgcccctggggctctagtatttggtgttacagggaggaaca  
cagtttgattccccaaacagaacaaaggatccttgagggcaactgtctgtgtcatttc  
atgtctccccaaaccaggcattaaaaacgcatagaattcctgctgacgggctctgtg  
aagttacaagttacaatttggtgaaaatgccccaaagtatttctctatttccaaggaa  
aggaaaagaaagatatagaattaaattaaagacaaactaaatcattcccatttctgca  
tgcttggtctgtgtgggaaaaaaaaatcatttcatctctgtctgcaacgcagacttgaca  
agttgagaaactccctaaaaacaaagcatacaaaaaaaaa

## &gt;IGR2151a

ggtgaaaatgccccaaagtatttctctatttccaaaggaaaggaaaagaaagatataga  
aattaaattaaagacaaacttaaatcattcccatttctgcatgcttggtctgtgtgggaa  
aaaaaatcatttcatctctgtctgcaacgcagacttgacaagttgagaaactccctaaa  
aacaagcatacaaaaaaaaaatcatacaattagtctcacttaagggttcaggaaggga  
aaacacagttaaactgaaaacggttaactggtgttaaaaaaagaaaccagcccggaaa  
tgttttaggactgcgtctatcgaagtcccttagggactgattgtccttcaatatattc  
atagacctgtttcacaaaaccagcagcccaacgctagagcttgtgagtgatgc  
agagtggaaactggacatggagctacacagctctgaatcatgttcccaacagcaagcaac  
agccacatgaaggattcctggcagtgccctctagccactacagtgggccatgggaagccg  
tacaacagcaaatggcatcctgcaacccagcttctccttctgccgattcctctctct  
gtccatgcctctgttccccatttgcccactggccaaatacactcagaaaaagtcctg  
cacaagcctccaccaaattaattccacattcttcaaga

## &gt;IGR2152a

ggcagtgccctctagccactacagtgggcatgggaagccgtacaaacagcaaatggcat  
cctgcaacccagcttctccttctgccgattcctctctctgtccatgcctctgttccc

cattggcccactggccaaatacactcagaaaaagtccatgcacaagcctccacccaaat  
taattccacattcttcaagagaggccttgaaaggtactgaaattcagggaagctctca  
ctagaccctcactggaatgccagaagtgatgtagtggccttgacataagggttatt  
cccatttatgaaactgaaattttttattctaagcacaaagctaacaatgtgatcaaaa  
cagaaaaataaacaatcctcattcaagtgtcagaatgcagcacaataggatcttgggat  
aaataagatagagctgtgaaattaataggggtgagaagaggggaggggtcagcgggagaag  
tccaccaaggggctgaaaggcctgtgcaggcagacggaaacctgggttcttaggggcca  
ggcatgacagtgcagaatgtccacctgggagtactggaagaaggactgcagggtccc  
cgtgaagaacacctcacactcccagctgccacacactgttgaactattctgggtggat  
acctctacctggatggcaaaggagacaggccaagatgc

>IGR2153a

gcctgtgcaggcagacggaaacctgggttcttaggggccaggcatgacagtgcagaata  
gtccacctgggagtactggaagaaggactgcagggtccccgtgaagaacacctcacac  
tccagcttgccacacactgttgaactattctgggtggatacctcctacctggatggca  
aaggagacaggcccaagatgcagaagggaagggaagtcacacttacaatgcagaggatgc  
gccctgtccctcatactctctgaaacattgcaggaataattctggttactgctattg  
ttgtgtttttgtaataaacgcgaataatcaacaaatggcctcaaaattgaacacatg  
tgatttacaccaattcatatatcaaacacaaataatgcagaacaaattagagaaaaact  
ccagtcaggctctccactcaccatggctgggtggctggcattcaactctccagcagccag  
ggagtccattttctgttctctgtggtccatcctcaggacttgcggcggggagtggggg  
gccaggggtgtgtgccacctgcaggccaaacaaggaaaaacataagcaacggccacaa  
tcatccgcctgaagccccctctatatcctcaggccgtggaagacctggatgcccgctgt  
gggacaagagccagaagcactcaccagtgccaacacctg

>IGR2154a

ctctgtggccatcctcaggacttgcggcggggagtggggggccagggtgtgtgccac  
ctgcaggccaaacaaggaaaaacataagcaacggccacaatcatccgctgaagccct  
cctatatcctcaggccgtggaagacctggatgcccgctgtgggacaagagccagaagca  
ctcaccagtccaacacctgtgtggccacaacagtcttctgttgggatcccaacacag  
gcagcagagtgcagaaaaacttaagatatcaagaagtcaagcatttctaacaacagca  
gcaaaactctacacagggtgtgtgttaccagacactgtctaaataacttacactgttt  
acttattcatcctcacacaacgggtaaatattttaggtctctgccaatttgcctgatt  
actgaattagggtgaatcattaaaaatgaataactgataatccaattcaagagggg  
tcacatatgaaaactctatgagagattctcagcatcttcagacattcattccctaaata  
ttcattgagtgtttgtatggacgagacactgttctaggacctgggaagagaggagcgaa  
cacacaagacaaagtccctgtctcacgaagcttctgtccagtgcggggaggcaacagt  
agaaaaggagacaaatgcatgcagaagaaaaagcaggga

>IGR2155a

gagagattctcagcatcttcagacattcattccctaaatattcattgagtgtttgtat  
ggacgagacactgttctaggacctgggaagagaggagcgaacacacaagacaaagtcctt  
gttctcacgaagcttctgtccagtgcggggagggaacagtagaaaaggagacaaatgcc  
atgcagaagaaaaagcagggaaaaagagatagacacaatgacaatgctgttaataccca  
ttcatttattcatttccaaggacttactaacctgtcatttcttggccacagctgc

atgccaggcactatgccagataaaattgtgggtaagaatatagacatggctctgcctgta  
tggagtacttacataagaggaacatctattattagtaaataatcacctaaataaatgca  
aagatgttaatctgtgatagggtgatagcagaattgcatgtagtccttgtgagagcatc  
tcaaggaggcctgacctgtctaagggaggcctgaaatggagtgtggggaggagcaatg  
tgttagtccattttgcattgtataaaggaatatctgaggctgggtaattataaagaaa  
agaggtttaaggcgggggtgcagtggtcacacctgtaatcccagctactttgggaggctga  
ggcaggtggatcatctgaggtcaggagtcgggaccaacc

>IGR2156a

tctaagggaggcctgaaatggagtgtggggaggagcaatgtgttagtccattttgcatt  
gctataaaggaatatctgaggctgggtaattataaagaaaagaggtttaaggcgggggtg  
cagtggtcacacctgtaatcccagctactttgggaggctgaggcaggtggatcatctgag  
gtcaggagttcgggaccaacctggccaacatggtgaaacctgtcgtactaaaaacaca  
aaaattagctgggtgtggtggtgcacgcctgtaatcccagctactttgggaggctgaggca  
gaagaattgctgaactggagaggctgaggttcagtgagccaagatcgtgccaccgcac  
tccagcctgggtgacagagcgagaatccgtctcaaaaaagaaaaagaaaaagagg  
tttggtcacagttctgtagactgtacaagtgtggcaccagcatctgcttggcttctggt  
caggcctcaggatgtcacatcatggtgaaaggtaaagggggagctggcatgtcacatg  
gcacaagaaggagcaagaaaggggaggaggtgccaagcctcttaacaaccagctctc  
gcctgaacagagtaagaactcactcattacctcggggaggggcaccacaaaccattcatgagg  
gatccagcccatgacccaaacacctcccaccaggcccca

>IGR2157a

aatcatggtgaaaggtaaagggggagctggcatgtcacatggcacaagaaggagcaagaa  
aggggaggaggtgccaagcctcttaacaaccagctctcgcctgaacagagtaagaac  
tactcattacctcggggaggggcaccacaaaccattcatgagggatccagcccatgaccca  
aacacctcccaccaggccccacctccaatgctggcgatcacattcaacatgagatttgg  
aagagacatgcaccaaaccatatcaagcagtgctcctgtcaaaagcacacctgtgcac  
aggctggatcatgggtagttggcaggggacaggaggcagggtgaagctggagaagcagtg  
aggtgaccttgcagactcaccagccacaagaggaggtcagccttaacctggagaa  
ctggagcaccacacaagggtcttaggcagaggattaatgcatttagatgtgtacttttaa  
aagattatctatgtaggctgagtaatggccctgccaagatgtctatgtgtgaatccctg  
gaggttgtgtatgttccctatatggcataaggacattgcaaatgtatcgaggttaa  
gggtcctgagaaccggagattatccaggtgggccaacataatcacaagtgtccttataa  
gaggaggcagggggagatctgacttcagatgaggagcct

>IGR2158a

gagtaatggccctgccaagatgtctatgtgtgaatccctggaggttgtgtatgttcc  
cctatatggcataagggacattgcaaatgtatcgaggttaagggtcctgagaaccggaga  
ttatccaggtgggccaacataatcacaagtgtccttataagaggggaggcagggggagat  
ctgacttcagatgaggagcctcagaatgatgtggcacgagaaagacttggttcgaagag  
gaggaagggggcctgagccagggaatgcagtggtcctctagaagctggaaaaagcaacaaa  
acgattctcctctagagcctccagaaggaacgcagccctgccaagccttaatttcagga  
cttctaaaagagtaaatgtgtgttttaaggcactgattttgtgtaattgttacag  
cagcaataggagaataggacatactagctcctgtaaaaaaccagactggacgtaaggcg

aggcgaggcagggaccagctagaggctactgctgtggtccaggcaagaggtgtgagagct  
tgcaccacagtgggtggccgtggggatggagaggagtgggtgcagttgaaggacccagcag  
gggaagagctgaccagtcaaaggctcgcgtgcaatctggcagatgttactggaatgccac  
aacaggcctctttcaggctcaggccctggctggctcaccc

>IGR2159a

tagaggctactgctgtggtccaggcaagaggtgtgagagcttgcaccacagtgggtggccg  
tggggatggagaggagtgggtgcagttgaaggacccagcaggggaagagctgaccagtca  
aaggctcgcgtgcaatctggcagatgttactggaatgccacaacaggcctctttcaggct  
caggccctggctggctcacccctggctacagcccagcagctttacagaaggaggaagctca  
caccagggtgtagaccactcccaggcgatgcaccatttactcacttaacctgccaac  
ccattcccacaaaaagttcaagagtctccaggaacaagccctaagaaagaacacgtggg  
gaatttttactaggcaaaaggtagcaattttctgccaaagcattaagccttgacgcgaa  
cttttttttttccgtgaacagagattttgtaattctggaagagaggtgtccagattt  
aaatatacacatctccaacacaggtgatacagaacctgattaaatctaactctaaaaa  
cttcattggtcagcagaaaaatgcagaaattaaagaaagactaaacaagaaactaggagact  
cagcgtctactctattcttgcctaataatccagacctacttaaaaaatgggatcctaatt  
tggctcctgttaatggagctgtcaagaagaaaaagcaata

>IGR2160a

acagggtatacagaacctgattaaatctaactctaaaaacttcatggtcagcagaaaa  
tgcagaaattaaagaaagactaaacaagaaactaggagactcagcgtctactctattctt  
gcttaataatccagacctacttaaaaaatgggatcctaatttggctcctgtttaatggagc  
tgtcaagaagaaaaagcaataaaattattcagagaaatttagaaacattctccattc  
tactccaaaaatataaatatgcacactccaaaaccaagtaccttgactgtactgagaga  
tgacaatgacgtcttaaccgtactatttccccatgatgttgacgagggccacagggacct  
aactgaattgtaagaacatgaaaggacccagggaatgcctgcagatgacaaaataccagggt  
agtcctgtcagtgtaggagcatgttaatttaaaaaatagatatattttctggtgacaaaa  
gtgacatgtctattactggaacacacaaactcctgtagtccaatgatccagagataa  
cccatttggaatatatttctccagctctttttcccatgatttcggcacaggcgcgcg  
cacacacacacacacacacacacacacacacactcatacttcatttttaacaaaatta  
caatactgtatatactttataaccagttttatataacag

>IGR2161a

aaaacacaaactcctgtagtccaatgatccagagataacccatttggaatatatttc  
ttcagctctttttcccatgatttcggcacaggcgcgcgacacacacacacacacac  
acacacacacacacactcatacttcatttttaacaaaattacaatactgtatatactttt  
ataaccagttttatataacagtatataatccctcatgtattaaatacagttttcataat  
gctagtattccatcatatgaaagtaggaaaatcacttaaccaatccctaattgctgaaca  
actgagtagtttctaactttatggtaacataagtcattgggaggaacctcctcatctacg  
ggaatatccctagatataaatctatgtctatagctctgattatttccttagggctcatt  
tctacatccatgcattgccattactattttgctataattaattaccatctgtaatgtac  
ttaacatttctctttacatcaactcatttctgtccttaacaaatgtattttaaaagcaa  
acctgactcgggtgtagtggctcacacctgtaatcctagcactttgggaaaacaaggcagg  
cggattgcctgagctcaagagttcaagaccagcctgggcaacatggcgaaccccgctctg



tactaaaaatacaaaaaatcagccgggtgtggtggtgcgt

>IGR2162a

caactcatttctgtccttaacaaatgtattttaaagcaaacctgactcggtgtagtgg  
ctcacacctgtaatcctagcactttgggaaaacaaggcaggcggattgcctgagctcaag  
agttcaagaccagcctgggcaacatggcgaaacccgtctgtactaaaaatacaaaaaat  
cagccgggtgtggtggtgcgtgcctgtagtcccagctactcaagaggctgaggcacaaga  
atcgcttgaacctatgaagcagaagttgcagtgagccaagatcatgccactgcactctag  
cctggacaacaggacaagactctgtctcaaaaaacaacaacaacaacaacacattat  
ttaagtggaaaaccaacatcatatgccataaatgaaggcaatcataataggtttattgg  
aataaaaaaacactgtggttaaaatatagtcaaaatactgtacccctttgccattctt  
ttatataaaatgggagattagagaggcttagagagggtgtaaaggtagctagcaccaag  
ctaaagttttcaccttccgttgatcagaagactgaaaaggaattgagcatgggaataac  
tttctcactgtgagtcagtgttagacaatgtggcaaatgtgtccaactagaattaccct  
gcgccacctgaaataacctcatatgaaaacatgccttagg

>IGR2163a

agagaggcttagagagggtgtaaaggtagctagcaccaagctaaagttttcaccttcc  
gttgatcagaagactgaaaaggaattgagcatgggaataactttctcactgtgagtcagt  
gttagacaatgtggcaaatgtgtccaactagaattaccctgcgccacctgaaataacct  
catatgaaaacatgccttaggacatattcctggaagtagaactgggataaaaggcatgga  
cactttaagcagcttctgataaccacagcccaaacaccatccaagttagtttaccacag  
tttactatgactgtgtccattttacttcacgttcacaaatattaagtactataacaaa  
atattaaaatagttaaaacgtttcagcttttgatgtaaaatatccagcagctgaatctt  
caaaggctattttcatgtcttctagctagtccttgaccctagggcagggtctatttatg  
aacctttaattagtggtaagcttacaacaaactgatactgcacttggtttcaccaagctg  
aagtaaaactctgtaaaagatgaggaagtgactttagcatttgcaaatatttcagaatgcc  
tttgtgccagcaaaggctaaacaacgatcagaattgcatggattccaaagtatactttg  
ggaataagagactcagagaagcattactcaagatacaat

>IGR2164a

gcttacaacaaactgatactgcacttggtttcaccaagctgaagtaactctgtaaaaga  
tgaggaagtgacttttagcatttgcaaatatttcagaatgcctttgtgccagcaaaggctca  
aacaacgatcagaattgcatggattccaaagtatactttgggaaataagagactcagag  
aagcattactcaagatacaattcactatgaattttcagcaattcaatgaaaagtctaaaa  
gaaatacatgtttaaactttctatcctggtataatatgcaattgcacaaataggttaga  
ttgtagattaatgcaattgttaatattttaacatagaaaaaggaaattgtattttgaag  
caagaagaattaataacaattggaattgttcagggtattttaataattcccaggcagata  
cctatgtgtatatgtgcctgtggggaaaaggtaaggaaaaagagacgtgagaaaacatac  
ttatgaattccagcactttgggaggctgaggcgggtggatcactagggtcaagagattga  
gaccatcctggccaacatggtgaaacccgtctctgctaaaaatacaaaaattagctggg  
catggtgggacctgtagtcccagctactcgggaggctgagacagggtgaagtgcttgagcc  
cgggagggtggagggtgcagagagctgagattgtaccactg

>IGR2165a

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

tgggaggctgaggggggtggatcactaggtcaagagattgagaccatcctggccaacatg  
gtgaaaccccgtctctgctaaaaatacaaaaattagctgggcatggtgggacctgtagt  
ccagctactcgggaggctgagacaggtgaagtgttgagccgggaggtggaggttcag  
agagctgagattgtaccactgcactccagcctgggtgacagagcgagactccatctcaa  
aacaaaaacaaaaacaaaaataaaaaaaaaagattattatgttggaggaggttatag  
gttctgattaattttgcagagacaaaaatacaagttatctaagcttaagaactaat  
gatggcctattgtaagatatagaactccaactcactgaataaaaagaaggaaagaaga  
acaggggacaaatacactttgatgaatccatagagtcacaaggaacacacacacacac  
gataaatacatggcaaacaaagatggcaaaaataagaccacatttatcagtgatcaaat  
aaatatgaatgaattaaattccattgttaaaagaccaagactttcacctaaatgcccat  
aaatggaaaatggataaattatggtatgtattccatttaattgatgtgtatgtgtgt  
atgtatgtgtatgtgtgtatataccacagaaagaggcc

>IGR2166a

aagatggcaaaaataagaccacatttatcagtgatcaaaataaatgaatgaattaat  
tccattgttaaaagaccaagactttcacctaaatgccataaatggaaaatggataaat  
tatggtatgtattccatttaattggtatgtgtatgtgtatgtgtatgtgtatgtgtg  
tataccacagaaagaggcccatgagtttcagtttagaaagatgtagaaatatttgt  
ataagcataggaaagggtccagaaaacacaccaatatgatatctgtggtgcctataaa  
gagcagttacctatgagtttcagtttagaaagtgtagaaaaatattgtataagcata  
ggaaagggtccagaaaacacaccaatgatatctgtggtgcctatggaggctgaagt  
ggactttcctgtctcactttacaatgtctatactgttgaattattacaaaagcatat  
gactaaagaaacatgaaaaatggaataataaacataagggcagaatcagcaaaatagag  
gacatagaggacaaaaaaagggtggttaacaaaactgaagtatttattgaaagtaga  
caaacctctagtgagactgatcaagaataactgacagaagatttttaaaatgagatta  
cagaaaaaggaagaatgacaataaacagacatttaa

>IGR2167a

aatggaataataaacataagggcagaatcagcaaaatagaggacatagaggacaaaaaa  
aaggtggttaacaaaacttgagatttatttgaaagtagacaaacctctagttagactg  
atcaagaataactgacagaagatttttaaaatgagattacagaaaaaggagaatga  
caataaaacagacattttaaaacttataaaggaataataaacacatgataatacatt  
tgaaaatacagatgaaatgaataatttctagacaataaaaatgccaaatttggcacaaa  
aatgtgaataaccacttaagagactcaataattttgaaacctctcccatagagttc  
agaccagaagattttacaagtgcctcctactaactccaaggagcagaaaatctctatc  
ttaatggagttgcttagaaaaatagaaaaaagagaaaacattgcccaatttgtacttg  
attttgaaatgttaatatggactgtacaataaagaaaaatacaggatagttcactta  
taaacatagatgttaaacctcctaaataaataattatctaatcaaatcgaaagtgtatta  
caaatacatcatgataaagtaattcaccacattagtcgattgtggaagagggtactagt  
ctcaccagtctctcgttctttcctcctggaacaccacc

>IGR2168a

ggactgtacaaataaagaaaaatacaggatagtttacttataaacatagatgttaact  
cctaaataaataattatctaatcaatacgaaggtgattacaatacatcatgataaag  
taattcaccacattagtcgattgtggaagagggtactagtgtcaccagtctctcgttct

-141-

ttctctctgggaacaccaccaggctacatttcccagccaccttacaattaggtgagacc  
catgagactagtccatgccaatggaatgtgaatggaagtgcactaatttctggctcat  
gaaaacagcagcatttctctatttcttttttcttcttttttttagacggagt  
ttagctcttgttgcgaggctggagtgagtgccgctgcttggctcactgcaacctccg  
ctcccgggttcaagcaattctctacctcagcctcccaagtagctgggattacaggcat  
gtgccacaatgcctggctaattttgtatttttagtagagacggggtttccatgtttgt  
caggctggctcaaacctcccagctcaggtaatcagcccgcctcggcctcctgaagtgt  
gggattacaggctgagccaccgtgcccggcaagagcagcatttctaaaagcaatcagt  
actcaacaccatcctgctgaggtagggcagcggcggactc

&gt;IGR2169a

atlttgtatttttagtagagacgggggttctccatgtttgtcaggctggctcaaacctcc  
cgacctcaggtaatcagcccgctcggcctcctgaagtgtgggattacaggcgtgagcc  
accgtgcccggcaagagcagcatttctaaaagcaatcagtactcaacaccatcctgctg  
aggtagggcagcggcggactccatgtttgaaacttaggaacttagaccatctttgtca  
aattcagatggtttctcaaagtaagatcattcaagtttgttcagtaatgggccgta  
tgatcagatctgtgtgattaggctgaattcattatttagagacaaaattgagttaaag  
gggattcttggtattggcctgcaaacctgtcataacttaaatgtaaagtcttgatgat  
ttagtcactttactctcagctcttagctcttctactcacctgtcctgttctacacaacc  
tgctgatgggtaactgaatacatatttctctcttcaggggatgggaacgccttaagg  
gcaggggctgtttccacagccctggggtggaaccccttctgcataccaagaatgagtt  
ggctatacttgacgaagggcaagacaaggtggcacgcacttctcatgcttctgctggca  
gatgcagtggactggaaatttctggtctgggaaggactc

&gt;IGR2170a

atacatatttctctcttcaggggatgggaacgccttaagggcaggggctgtttccacag  
ccctgggggtggaaccccttctgcataccaagaatgagttggctatacttgacgaagg  
caaagacaaggtggcacgcacttctcatgcttctgctggcagatgcagtggactggaaat  
ttctggtctgggaaggactcggctgtgagtgacatccctgacatctatgctagcc  
ccgggatgggggcccagcagagtaaggccctgacttcacatggacagggccagggaag  
ggggccacatcctggcctagttgcttccatgccgtgatcaaggagatgagctgccag  
cttgctcggfcaaggaaacttggaaggcactccaagtgccccaggtgcaccagatcta  
ggaaacttaagcaaacatagaggtatgggtggggccagtgggaaaaatgagttga  
caggtcagaggagtagattatgagctcaggttaggcattctgttcagcattttacgtac  
acctcccacttttgattttaccaacaccaggaggtcgggtgctctacaaaaggga  
ggcgtgctcaggtggcccacttgccacggttccagctcagcccgggctgctagcccct  
tggcacgcttgtctgaggcctccaggcttccagcctgg

&gt;IGR2171a

talgagctcaggttaggcattctgttcagcattttacgtacacctccacttttgattt  
ttaccaacaccaggaggtcgggtgctctacaaaagggaaggcgtgctcaggtggcccg  
acttgccacggttccagctcgacccgggtgctagccccttggcacgcttgtctgaggc  
ctcccaggtcttcagcctggcctggaggctcaaaagccacgaaacccaagggtgccgctt  
ctcaggccctccccgccccacggcagaacccctgacctgcccgggtcaaacgcctggc  
gtcgggcccgcgggtccgcaaggaggagcccgcaggcggccgcgaaggggctgtgctt

acctcgccggcgcggggtgcgggcccgaggccgcgtccaggtggcgggcgctgcat  
tctgcgcccctgcctgaaacggcagctgcgccagtcctggccacgaccgtttcattt  
cctcaacgacatcggcaggaagcgaaagcgaaacctccgggagggcgggaccggggccg  
agcgcgagtgaaacggggcgcgggcgggcgcgggcgggcgagccagagggcgggggccc  
cgggctcggggtctgcgcgtggcctggcccgggtggcggttcgggggtggagctgggccagccg  
agtgcggagagctagtccgccacgcacacctgcctcggc

>IGR2172a

aaagcgaaagcgaaacctccgggagggcgggaccggggccgagcgcgagtgaaacgggg  
gcgcggcgggcgcgggcgggcgagccagagggcgggggccccgggctcggtctgcgcgt  
ggcctggcccgggtggcggttcgggggtggagctgggccagccgagtgcggagagctagtcc  
gccacgcacacctgcctcgggcgggaccggggccccgggctggggcgggagggctgggcaggcc  
cgccgtaagtggaaaggcgcccgcggcgcttcggccgaccgggacaggttcctccatctg  
cccttcattcagcggttacttgggctgtggctggcagccggccccgggacctgaccgctg  
gcggcgccctcgggctctggcctgaggagcgagatggcagcctgagcaactgggaccaagc  
ctctgaggagtcctcggttgaggggacttgaccatgaggtaccaggcatctcatctgggg  
tcagcggagaacccaaaagtcaatgacgtcggtaaatgggggtcccttcacccgataag  
agaaactggaacgcaagcctatgggttgactccctgggttaagcgggtgccatcaata  
tctaaacatttagagattccaggttcagtgctggccgtcttactgtcagtgattg  
gggcaaaatattcaagtagttagacttaattacttccct

>IGR2173a

tcaatgacgtcgggtgaaatgggggtcccttcacccgataagagaaactggaacagcaagc  
ctatgggttgactccctgggttaagcgggtgcccatcaatatctaaacatttagagattc  
caggtttcagtgctgcccgtcttactgtcagtgattggggcaaaatattcaagtag  
ttagacttaattacttccctgtgggatgggaataataataatcacactactgccagaa  
tttaggaatgaacaatagaaggaaagaaacttaaaatttctgacagcctctaagt  
gggtccctgaggcgagcaaccaagtcatttacctggatgctgtagacattctctaag  
gccagtcacacttgagctatctccatgataacaggtagttgtcaaagtttgaca  
atattatctggagtttaaagactgaggaagccctgcaattttttggaaggtgtctgaa  
acttagcctgacaattagccccacaattatgccacggaaccagggtttttagagtg  
agcatggccacaacgttgatggacattctacagcgggttcagcgtggccactgagg  
tctgaaaatactttgcaagcatttctattcactgtcttttagaaaacattgtaagaca  
ccatactccaaacacagtttgcctgtctgtacgtttgt

>IGR2174a

ccccacaattatgccacggaaccagggtttttagagtgagcatggccacaacgtttg  
atggacattctacagcgggtgtcagcgctggccactgaggtctgaaaatactttgcaa  
gcatttctattcactgtctttagaaaacattgtaagacaccatactccaaacacagtt  
tgccctgtctgtacgtttgtgcaaagcaacataaaagtgtttgccatagagcaaacac  
agagcagtcgtgtataactggaacaagaaacaaaaatgagctattaaatctgccagagt  
cactttgggttacctgtttgtaatttgggcacattccctgcaagatggaggccctggct  
gtgactgatgtagggtgtgtgtccttgcaatagttccctcaagagcaggtgggaa  
agtggggcaggccaaatgatgaccttagaaaaacaacagcctgtttctgtccagaaga  
tgctacttttagtctgtatgatgaaggaaaaagaaaaacaaaaaggcaagccttgag

cctcttctctttaggacaattcttgactccaagatagcaaagtagagttaaattctgc  
ttctgcataaaaactatgtttgggaagatgaagatcaggaaaagacaggaagagatgtaa  
gcagataagccaaatcctggttaccttttatagacatcac

>IGR2175a

tatgaaggaaaaagaaaaacaaaaaggcaagccttgagcctcttctctttagga  
caattcttgactccaagatagcaaagtagagttaaattctgcttctgcataaaaactatgt  
ttgggaagatgaagatcaggaaaagacaggaagagatgtaagcagataagccaaatcctg  
gttaccttttatagacatcacacatgtgaacagagagcatcaggaggtcaaggccggcct  
gatgttttcatcttggaacttccaaggtccaggtttggccttgactttgtggggcc  
aaaaatctcgtctgacttccagtgtaccagagtcgattagcactgttgcataaagtcaga  
atgacaactgactgatttcattactatttgctagagaagtgtatgctaaatgcattac  
atgcattattacctcattatttctccctactatcatgtggtatattataatctatttatt  
tttctttgggagaaaaaagatgaaggaaatccaaggtcacatggttactatgtatgt  
tagtggcaggggttgaatcaaggccatctgaccccaaacctgaagcttatccattctg  
ttagaagcaagactgtcgggaacactggactcaggccacctgatgaacacattctcttc  
ttgtagccatgcagtttggagccccatagtcagaaggtgg

>IGR2176a

agatgaaggaaatccaaggtcacatggttactatgtatgttagtggcaggggttgaatc  
aaggccatctgaccccaaacctgaagcttatccattctgttagaagcaagactgtcgg  
gaacactggactcaggccacctgatgaacacattctcttcttagccatgcagtttg  
agccccatagtcagaaggtggcttagtgagcctaaatcagaatcggagagtggaattgt  
ctgacttaaatgtttgatgatcaggctcgggcaatgtgggatgtctcttccacaaca  
caggtcaaacctataggaagtactgttcactcatccctgctggcctggccagcccttct  
ccctagatggggcctggtggacaccatctgtttgtgcaatgaggtctctgtattatgg  
taccaggccgcctctcctcagatggacatttttagatagagcaaggcggtactgagtaa  
cattactcagtaaggtctcgcagcccttattttctttatggagacattttgtatctttg  
ctctgattggcttgatttataatttaacttctaaaggacagctttctatcccacctttg  
gagacagctctgtttccttactatccttctgatctaaccctggaacaaaagtgtgtgc  
agtagcaagttctgaacaagaactttatccaggcctgca

>IGR2177a

gcagccctattttctttatggagacatttgtatcttctgctctgattggcttgattta  
taatttaacttctaaaggacagctttctatcccaccttttgagacagctctgttttct  
tactatccttctgatctaaccctggaacaaaagtttgcagtagcaagttctgcaaca  
agaactttatccaggcctgactgatagtcagtaaagacacaaaagaagcaaaagtccaa  
gtccaaggccagtcacaaaagactttactacagaatcgggcaatggagggttggggggcg  
gggcacagctgatgatcacgcaaccagctgaagaatgatataaatggaatgaaagcatg  
gtgcaagcagcatctaacttaggagtcactggttaggaaaaaaaatacctgatgtgtga  
ttcagataaaaaatgaaaaaataacccttttagatatttcattcaacaaatattctgtgg  
caactacaaaatgcagccacctgctaagtctggggattcagtgatgagcaaaaataaat  
gtgtgtctctgcctcgggaacacacttgagttaggtaataaagcaatcaataatttgt  
caaataagaatgccatcctaataactacaagatgcgtttgacgctataagagggaatgc  
cagaggcaaaactccttaattgggccacctgtactctggg

>IGR2178a

ccctgctaagtctggggattcagtgatgagcaaaaataaatgtggtctctgccctcggga  
aacacacttgagtgaggaataaagcaatcaataattggtaaatatagaatgccatcc  
taaatactacaagatgcgtttgacgctataagagggaatgccagaggcaaaactcctcta  
atggggccacctgtactctggggcttctgtcagctctggccagcactttctcagaatggct  
ctgcagctctgaggctcttctactctccatccctctctctcttctacagggg  
tcagacctgcattacgggtgtggggctctctgtctactcttgcctctctctcttct  
tctcataggcattttcccaataaactctccagggttaattccatcttgggtgtctgt  
ctaggaggacccaagctgacacaatgatgcccttcattgacttgagaaaccttggaagag  
gccaagtttggagggtccaattctgcacatgttggttaggtgtcaggtgggcaagg  
aagctccatatctgttccactcagaagataatgcttgtcttgggtactaagctatc  
aaccatgtcctctgtgggagctagggctgtgtctgttttaaatgcttgtccatgga  
taatcagcaattctcagtttagatctcaataactagaacta

>IGR2179a

ccaattctgcacatgttggttaggtgtcaggtgggcaaggaaagctccatatctgttct  
ccactcagaagataatgcttgtcttgggtactaagctatcaaccatgtcctctgtggga  
gctagggtctggtcttgttttaaatgcttgttccatggataatcagcaattctcagtt  
tagatctcaataactagaactatttccctctagaaaagcacaaactaccaatagcaaaaa  
catcccttaactccttgaggaggagttaaaagtcaaaaaatcgaaaggagatgagcaat  
tgttctgaacagccaaagggaataattttgatgtaggggggcccttagtttctggga  
aaaggaaagcttt  
ctggaatgtgatggtgtggtcttgggtcactacaatctctgcctcccaggttcaagtgt  
tcttctacctcagctcccaagtagctgggattacaggcaccgccaccacacctggcta  
atttttgtatttttagtagagacagggttcttattgttgccaagctggtggcgaactc  
cagacctcaggtgatccaccacctcagctcccaagtgctgggattacaggtgtgagt  
cactgcaccggcctggaagtcatctttataagtgttcc

>IGR2180a

aagtagctgggattacaggcaccgccaccacacctggctaattttgtatttttagtag  
agacagggttcttcttattgttgccaagctggtggcgaactccagacctcaggtgatccac  
ccacctcagctcccaagtgtgggattacaggtgtgagtcactgcaccggcctggaa  
gtcatctttataagtgttcttaaggaaagaacttacatgttggcagcacagatggaa  
atctgtcattgttgtagaaagaagctagcactccaaaaggcacttttgcctctgagctta  
gcctccctgagcaagggtgcccttgagagctgggtgtcaaaggatgacctgtcactgag  
gttcagtcaccagcaacctgttgtgagtgaatcatctgttgaaggcagagctcttcagg  
tccaccgtggttcttccatggaaggaggttgaacacaaatcatgagtactacatgaa  
tattgaacgtggcactcagtcatagtcaagtatagcatttccctaccaactgcacacc  
ccaggagcccataatccatctcatggtggtgtggaggtgacagtaggcgagtttacatg  
ctttgttcccaagctgtcaggaagcccagatactattagtctgcttgggtctaaaaagaga  
aagaagtaggtgtgggcttcatgaaggatgtttgtctgag

>IGR2181a

gtcatagtcaagtatagcatttccctcaccaactgcacacccaggagcccataatccat  
ctcatggtggtgtggaggtgacagtaggcgagtttacatgctttgttcccaagctgtca

ggaagcccagatactattagctcgttggctctaaaaagagaaaagtaggtgtgggctt  
catgaaggatgttttgcctgagggctgtgtctctcattcaaggatgaatgagtaaaagcat  
ttgttaagtttttttttaaaactaccaaatgtacagtgagtgtactacttaagcacc  
ttagggataagcctgtcttttcgccaaaggtagttacaattccctcatggaaccaagc  
ataatatgataaggactaattattgtagagtcaataattacattataatttacacgcat  
gatctaatttaactttatagaacacctgatataggttaaggaattttacagttgaggaaac  
agtcacaggaaagttaagtgaactcccccaggtagtagagctagtaagtgaagacatcta  
cttttgaccatatactttatctactctggatctgggcacttagccaaagccatagtcc  
tccaagaaaggagatgtcatggggtaaacctgaacatgaatagaattgggataatcaga  
gatgaagcaggacaacgtatggatggaggcaggagtgtca

## &gt;IGR2182a

gactcccccaggtagtagagctagtaagtgaagacatctacttttgaccatatacttt  
atctactctggatctgggcacttagccaaagccatagtcctccaagaaagaggatgtca  
tggggttaaacctgaacatgaatagaattgggataatcagagatgaagcaggacaacgta  
tggatggaggcaggagtgtcaaggagaaatagagagctaaaagtgtgtcatatcaggagt  
tgaaatgcataaaaaatgtgaagtttgaccctttatcgtatataatgaccttctt  
tgtctgttaaaatctattttgtctgatattaatacagccattcaactctcttttggtta  
tttgatggaagatcttccaaccttttaatttcaacctatttgtgtctttgaatctaa  
attgaaactgtttagacatcataatagttgcatcatgattttaaactatttggtgaa  
tcctgccttttaattgaagagttacatttaataattactgaaaagggttactcctg  
ccatttgcatttgtttctatgtctttatcttttgcctcctcaattccttcattac  
tgctttctttgtttaaaccatattttctaggataattctaaatctgtatcttttaa  
agtatatattatttatttttcttaataattgccctag

## &gt;IGR2183a

gagttacatttaataataattactgaaaagggttactcctgccatttgcatttgtttt  
ctatgtctttatcttttgcctcctcaattccttcattactgcttcttttgtgttaa  
tccatatttctaggataattctaaatctgtatctttttaaagtatatattatttatta  
ttttcttaataattgccctagagattacagttcatatattaatttgaacaacctgggtt  
agattaataccaagttaatttcaataatatgcaaacactttgttctattcagctctact  
ccctttatattatattccacaaattacatctttacacattgtatgcccatcaacctaaa  
ttttaattattgctttatgcagttgtcttttaaaattatgtaggaaaagagaggttagg  
aaaaaaattaactgccctttatatttacttaggtagctacctcctcccatgttcatta  
ttccttcacgcagattcaagtattcaagttactggccagtgctctttcattttagcctga  
aagactccctttagcattttttttttttagatggagtctccttgttctgtgtcca  
ggctggagtgcagtggcacaatctcagctcactgcaacctctgcctccaagttccagt  
attctcgtgcctcagcctccaagtagctgggattacaga

## &gt;IGR2184a

gtattcaagttactggccagtgctctttcattttagcctgaaagactccctttagcattt  
ttttttttttagatggagtctccttgttctgttgcaggctggagtgcagtggtcac  
aatctcagctcactgcaacctctgcctccaagttccagtattctcgtgcctcagcctc  
ccaagtagctgggattacagacatgtgccaccagcctggctaattttgtatttttagta  
gaggcagagtttaccatattgaccaggctggtctcaaacctccaaacctcaggtgatctg

cccaccttggcctcccaaagtgtctgggattacagggcatgagccactgtgcctggcccttt  
agcatatTTTTtaagtactTTaagttctagggtagatgtatacaatgtgcaggtttgtt  
acataggtatacatgtgccatgttggttctgcacccatcaactgtcatttacattag  
atatttctcctaagtctacccctccctcagcctcccacccctgacagggcctgggtgtgt  
aatgtccctgcctgtatccatgtgttctcattgttcaattccacctatgagttagac  
catgtggtgttggtttctgtcgttgtgagagtttctgagaatgatggttccagcct  
atccatgtccctgcaaaggacatgaactcatccttttta

>IGR2185a

ccctccctcagcctcccacccctgacagggcctgggtgtgtaatgttccctgcctgtat  
ccatgtgttctcattgttcaattccacctatgagttagacatgtggtgttggtttc  
tgtcgttgtgagagtttctgagaatgatggttccagcctatccatgtccctgcaaagg  
acatgaactcatcctttttatggctgcatagtattccatgggtgtatgtgccacattt  
tcttaatccagtcctatcattgatgaacaactgggtgttccaagtcttctattgtga  
atagtgccacaataaacatacgtgtgcatgtgtctttatagtagcatgattataatcct  
ttgggtatataccagtaaatgggtagggtggtcaaattgtatttctagtctagatcct  
tgaggaatgccacactgtctccacaatggtgaactaatttactccaccaacagt  
gtaaaagcttccatttctccacatcctctgcagcatctgttgttccctgacttttaa  
taatgccattctaactggcgtgagatatctcattgtaatttgaattgcatttctga  
tgagcagtgatgatgagcatttttcatgtgtctattggtgcataaatgtcttctttg  
agaagtgtctgtcatatactttccctgttggttttt

>IGR2186a

tccacatcctctgcagcatctgttgttccctgacttttaataatgccattctaactgg  
cgtgagatatctcattgtaatttgaattgcatttctctgatgagcagtgatgatgagca  
tttttcatgtgtctattggttgcataaatgtcttctttgagaagtgtctgttcatata  
ctttccctgttgttttttctgtaaaattgttaagtcttctgtagattctagata  
ttagcccttttccagatgggttagattgcaaaaatttctcctgttctgtaggtgcctgt  
tccactctgatggttagtttcttctgtgcagaagcctttagtttaattagatcccat  
tgtcatttttggcttttgttgcattgttttgggttttattcatgaagtccttgccca  
tgctgtgtcctgaatggattgtctaggttttcttaggttttatggtgtttttg  
ttgtttgttttgtttttgagacagtcctcactctgtcggcaggctagagtgcagtgg  
tgcaatctcggctcactgcaacctccgacttctgggttcacaccattctcctgcctcagc  
ctcccagtagctgggactacaggcaccaccactacgcctggctaatttttatattt  
tagtagagatggggttccacatcttagccaggatggtct

>IGR2187a

tgagacagtcctcactctgtcggcaggctagagtgcagtggtgcaatctcggctcactgc  
aacctccgacttctgggttcacaccattctcctgcctcagcctcccgagtagctgggact  
acaggcaccaccactacgcctggctaatttttatatttttagtagagatggggttca  
ccatcttagccaggatggtctcgtatcctgacctcatgatccgcccctcctcagcctccc  
aacgtgctgggattacagggctgagccactgcgcctggcaggtttcatcgttttagatc  
ttaacgtctaagtctttaatccatcttgaattaattttgtataaggtgtaaggaaggga  
tccaattcagcttctacatatggctagccagtttccagcaccatttataaatagg  
gattcctttccccatttctgttatttctgttttgcaggctgtgtaaagatcaaatg



gttgtagatgtgtggtgttattctgaggcctctgttctgttgcatggctatataatct  
gtttcgtaccagtgccatgctgtttggttactgtagccttgaatataagcttgaattc  
agacagcgtgatgcctccagcttgttcttttgccttaggattgtcttggtatgcgggc  
tctttttggttccatatgaactttaagtagttttcc

>IGR2188a

atttctgaggcctctgttctgttgcatggctatataatctgtttcgtaccagtgccat  
gctgtttggttactgtagccttgaatataagcttgaattcagacagcgtgatgcctcca  
gcttgttcttttgccttaggattgtcttggtatgcgggcctttttggttccatatg  
aactttaagtagtttttccaattctgtgaagaagtcattggtagcttgatgggatg  
gcattgaatctgtacattaccttgggcagtatggccatttcacgatattgagtcttct  
atccatgaacatggaatgttcttccatttgttgtgctcttttatttcaactgagcagt  
ggttttagtcttcttgaagaggtccttcacatcccttgaagtcggattcctaggtat  
tttgcctcttttagcaattgtgaatgggagttcactcatgatttggctgtttatctgt  
tattggggtataggaatgcttgtgaatttgcacattgatttctaacctgagacttgc  
tgaagttgtttatcaacttaaggagatttgggctgagatgatggggttttctaaatata  
caatcatgtcatctgcagacagggacaattgacttctcttttctaattgaataacct  
ttattctttcccttgcttgattgctctgccagaacttc

>IGR2189a

ttgtgaatttgcacattgatttctaacctgagacttgcctgaagttgtttatcaactt  
aaggagatttgggctgagatgatggggttttctaaatatacaatcatgtcatctgcaga  
cagggaacaattgacttccctcttttctaattgaataacctttatttcttcccttgcc  
gattgctctgccagaactccaacacatgttgaataggagtggtgagagagggcatcc  
ttgtcttgtgctggttttcaaagggaatgcttccagttttgccattcattatgatatt  
ggctgtgggtttgtcataaatagctcttattttttagatacattccatcaatacctag  
tttattgagagtttttagcatgaagggtgttgaatttgtcaaaggccttttctgcatc  
tattgagataatcatgtgttttgcattggttctgtttatgatgcattacgtttat  
cgatttgtgtatgtgaaccagccttgcattcccagggatgaagccaacttgatcatggtg  
gataagcctttttagtgtgctgctggattcagtttccagtttttattgaggattttgc  
atcgatgttcatcagggatattgatataaaattcttctttttgtgtgtcttgcagg  
ctttggtatcaggatgatgctggcctcataaaatgagtta

>IGR2190a

cagccttgcattcccagggatgaagccaacttgatcatggtggataagctttttagtgc  
tgctggattcagtttgcagtttttattgaggattttgcatcgtatcagggat  
attgatataaaattctctttttgtgtgtcttgcaggccttggatcaggatgatg  
ctggcctcataaaatgagttaggaggattccctcttttctattgattggcatagtctc  
agaagaaatgtagcagctcctcttgcacctctggtagaatttggctgtgaatctgtct  
ggtcctggcctttttggttgataggctatttattgcctcaattcagagcctgtt  
attagtgtattcagagattcaacttttctggtttagtctagggaagggtgtacgtgtcc  
aggaatttatccatttcttctaaatttctagtatttccgtagaggtgtttaaagtat  
tctctgatggtagtttatttctgtgggattggtggtgataccccctttatcattttt  
attgtgtctattgatttctctcttttttcttattagtcttgcctgagctctatca  
atttgttgatcatttcaaaaaactagctcctggattcattgattttttgaagggtt

tttatgtctctatctccttcagttctgctctgacttagt

>IGR2191a

tttctgtgggattgggtggtgatatccccctttatcatTTTTtattgtgtctatttgattat  
tctctctTTTTtcttattagctctgctggcagctcatcaatttggatcatttcaa  
aaaactagctcctggattcattgattttttgaagggtttttatgtctctatctcctt  
cagttctgctctgacttagttatttctgccttctgctagctttgaattgttctct  
ttgcttctctagttctttaaattgtgatgttaggggtgtgatttagatgttctctgctt  
tctctgtgggcatttagtcataaattccctctacacactgtttaaatgtgtccag  
ggatgctgggtgcgtgtatcttgttctcattgtttcaaagaacatcttatttctccc  
ttcatttctgtattcatccagtagtcatttaggagcaggtgttcagttccatgtagt  
gttcagtttgagtgagttcctaatacctgagttctaattgattgcactgtggctgag  
agacagttgtgtgatttctgtactttacatttctgaggagtgcttgcctccaatt  
acgtgtcaattttagaataagtgtgatgtggtgctgagcagaatgtatattctgttgat  
ttgggggtggagagttctgtagatgtctattaggtccactt

>IGR2192a

ccctaactcctgagttctaattgattgcactgtggctgagagacagtttgttgtattt  
ctgtacttttacatttctgaggagtgcttgcctccaattacgtgttcaattttagaat  
aagtgtgatgtgggtgctgagcagaatgtatattctgttatttgggggtggagagttctgt  
agatgtctattaggtccacttgggtgcagagctgagttctagtcctggataccttgttga  
tttctgtctcattgatctgtctaattgacagtgggtattaaagtcttccattatta  
ttgtgtgggagctctaagctcttctgttaggtctctaaggactgttttgaatctgggtg  
ctcctatattggctgcataatatttaggatagttagctcttcttgaattgatccct  
ttaccattatgtaatggccttcttgttcttcttgcatttgttgggttaaagtctgttt  
ttatcagaaactaggattgcaacccctgcttttgtttccatttgccttggtagatcttcc  
tccatcccttcattttagacaatatatgtcttctcatgagataggtcttctgaat  
acagcacactgatgggtcttgactcttataccaattgccagctctgttttgaattgg  
ggcattttagtccatttacatttaagggttaattgttatg

>IGR2193a

caacccctgcttttgtttccatttgccttggtagatcttccatcccttcattttgag  
acaatatatatgtcttctcatgagataggtcttctgaatacagcacactgatgggtct  
tgactctttatccaatttgcagctctgttttgaattggggcatttagtccatttaca  
tttaagggttaattattgtatgtgtgaattgatcctgtcattatgatgttagctggtgt  
tttgcctgtagtttagtcagtttcttcttagcattgatgttcttacaatttggcgtgt  
ttttgcagtggttggtacaagttgttcttccacgtttagtgccttctcaggagctct  
ttaaggcaggcctgggtggtgacaaaatctctcagcatttgccttgccttggaaaggatttta  
tttctccttcacttatgaagcttagtttggctggatatgaaattctgggttgaattct  
tttctttaaagaatattgaattgaatagtgccccactcttcttggcttatagggtt  
tctgcagagagatccactgttagtctgatgggtctcccttgtgggttaaccaaccttct  
tctctgggtgcccttaacatttttcttctcatttcaaccttggatgaatctgacaattatg  
tgtcttgggggtgctcttcttgaagagtatctttatgggtg

>IGR2194a

tattgaatagtggccccactctcttctggcttatagggtttctgcagagatccactg  
ttagtctgatgggcttcccttctgggtaacccaaccttctctctggctgcccttaaca  
tttttccctcatttcaaccttgggtgaatctgacaattatgtgtcttgggggttgctcttc  
ttgaagagtatctttatgggtgtctctgtatttctgaactgaatgttggcctgccttg  
ctagggtggggaagtctcctgggtaatatcttgaagagtgtttccaacttggttccat  
tctccctgtcactttcaggtacaccaatcaaacctagggtctggcttttcacatagtccc  
atatttcttggaggtttgttcgttcttctcattctttttctctaacttctgttctcac  
gctttatttctgatacttctctccgctagattgattcagctatggatacttgtgtatg  
cttcacaaagtcttctgtgtgttttccagctctatcagggtctttatgttcttcttaa  
actggttattctagtagtaattcctctaacctttttcaaggttcttagcttcttgca  
ctgggttagaacatgctcctttagctcaggggggttgtattaccaccttctgaaggct  
gtcatttcgtcaaacctcattctccgtctagtttgttccc

>IGR2195a

gtgttttccagctctatcagggtctgttatgttcttctctaaactggttattctagttagt  
aattcctctaacctttttcaaggttcttagcttcttgcactggggttagaacatgctcc  
tttagctcaggggggtttgttattaccaccttctgaaggctgtcatttcgtcaaacctcat  
tctccgtctagtttgttcccttgttggcgaggagtgtgttccttggaggagaagagg  
cgttctgggttttgaatttccagccttttgcactggtttttctcattcttagtgcatt  
tatctatcttgggtcttctgtgtgtgtgaccttcggatgggggttttgtgtggacgtccg  
tttcttgatgttgatgttgatgctgttctgttgcctagttttcttctaatagtcaga  
cccctctgctgcaggactgctagagtttgcctggagatccactccagacctgtttgcctg  
gggtatcaccagcagagggtgcagaacagcaaaaatttgcctgttctacctctggaag  
cttcgtcccagaggggcacccccagatgccagccagagctctcctgtatgaggtgtctg  
tcgaccttgttgggaggtgtctcccagttcgagggtcgggggtcagggaccttga  
ggaggcagctgtcccttagcagagctcaagtgtgtgtgt

>IGR2196a

gcagaacagcaaaaatttgcctgttctacctctggaagcttcgtcccagaggggcac  
ccccagatgccagccagagctctcctgtatgaggtgtctgtcgaccttgttgggaggt  
gtctcccagttcggagggtcgggggtcagggacctttaggagggcagctgttccctta  
gcagagctcaagtgtgtgtgtggagatccgctgtctcttcagcggcggcaggcacaac  
atttaagtctgctgaagctgcacctgctgccccctccccaggtgtctgttccaag  
gagatgggaattttatataagccccctgactagggtgctgcctttcttccagagatgc  
cctgcgcagagaggaggaatctagagaggcagctgtggctacagcggcttggcagactgc  
agtccctgggggcttgtttactgtgaggggaaaactgcctactcaagcctcagtaat  
gggtggacgccccctccaccaccaagctcaagagctccaggttgacttcagacagctgtgc  
tggcagcaagaatttcaggccagtgatcttagcttgcctgggtccatgggggtgggatc  
cgctgagcaagaccacctgggtccctggcttcagcccccttccgggggagtgatggtt  
ctgtctcactgggtgtccaggcatcactgggggtatgaaaa

>IGR2197a

accaagctcaagagtcccagggtgacttcagacagctgtgtgtggcagcaagaatttcagg  
ccagtgatcttagcttgcctgggtccatgggggtgggatccgctgagcaagaccacctg  
gctccctgggttcagcccccttccgggggagtgatggttctgtctcactggtgttcca

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ggcatcactgggggtatgaaaaaaaaactcctgcagctagcttgggtgtctacccgaatggcc  
gccctgtttgtgcttgaaaccagggtctggagatgtaggcaccaaggaatctcctg  
gtctgcgggttcgaagactgtggcaaaagcatagtatctgggccagagtgcactgttc  
tcatggcacagtcacctcatggcttcccttggctaggggagggagtccctgtcccttgc  
acttctgggtgagggcatgccccaccctgcttggcttgcctccgtgggctgcacca  
ctgtctaactagtcaccaacgagatgagccgggtacctcagttggatatgcagaaatcacc  
caccttctgcgttgatctcgctaggagctccagaccagagctgttctggggctttaacg  
ttttagtgtcatttgttggcatgggggtggggggcaattctataggacatttagaat  
tttcagaactatttctcataatcaggggtgcatgagc

>IGR2198a

gagatgagccgggtacctcagttggatatgcagaaatcaccaccttctgcgttgatctc  
gctaggagctccagaccagagctgttctggggctttaacgttttagtgtcatttgtt  
tggcatgggggtggggggcaattctataggacatttagaatttccagaactatttctc  
ataatcaggggtgcatgagcattaagtttcaaactcttccagtagacgaacctgcaaa  
ataccaatatcactgtgtattagtagcagcttctccttgatgtggagtgtatcct  
cacacttctctatgagaagtctttgtgagacttattcccaggtaaagagccagtcagg  
ggcctggctgctgccctctggctggcgcaacagacagatgatgtcccagtgctctggcg  
gcttctacagaactctgtccctgaggttatgtcccttctcatgaggtgacaccttcag  
gggtgggtctgcctgagagctccaaaacatgatttctgctgagaaacctgtgtctgcat  
cagtgcatcctctgttaatctcatgagattttatttccaaagtgttttaagcaatgg  
catagaacataaggtgttgcagtgcatcaagcctctatcagcctaaaagccctt  
taggaaaagaattaaaagacaaacccccagaagaaagttc

>IGR2199a

ctccaaaacatgatttctgctgagaaacctgtgtctgtcatcagtgcatcctctgttaat  
ctcatgagattttatttccaaagtgttttaagcaatggcatagaacataaggtgttg  
ccagtgcatgcatcaagcctctatcagcctaaaagcccttaggaaaagaattaaaaga  
caaacccccagaagaaagtctattgtgtctatttactacctggcaggggaatagggtcttg  
tgccacctcattgaccgtcacttagaccaggtattaagcagaataattctctttgacaa  
acaacagccttatggaatccatgagaatgttcagggaacctgacagagataagaattag  
tttccagaataggaaaagatgggtatggcaaatcttgcctttactttgatctgtggcag  
gaaactgggttttaagaaaatctgggtgttctccacctctttctttgtctttata  
tttctgtgggtatgtggttctagtatacacattaactgaacacctcatcactacca  
actctgccccctgtggctacagtttgtgtatgcctctctcctggagcagaggagatccttg  
gtctgataacacactcagcttcccaaagtcaggtcttaagggaacaagccacacacg  
aatccaacaggttcgacagaggacttggaaattccacatg

>IGR2200a

ttctagttatacacattaactgaacacctcatcactaccaactctgccctgtggctac  
agtttgtgtatgccctctcctggagcagaggagatccttgggtctgataacacactcagt  
cttcccaaagtcatggctctaagggaacaagccacacacgaatccaacagggttcgaca  
gaggacttggaaattccacatgcttggctcaacctggaagtacttgggtcttgcctca  
ccacatgaagagctctaagcattcaggttaattatggttttgccctcagaaggccacaaa  
tgactggaatcagtggcagtgagaataagagagaaaatgcagaaactattcactcctgct

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted March 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

acaggacaatgggtagacagaactgcaattcagattctagagcccctgggaagacagtta  
atcagtagtccagcacagaaccatgttgaggagagtggagaagccaacagtgttcaga  
agacgtgctgccttcttctccccaagttgatgctgctgtttgttatgcaacatgc  
ccttgagtttctatccaacactggagcttttaccaggtccatccacaccttctagccc  
aaaatgccctgtgcaaattgtatatagattaagacacctctgtgcaccacactcaacc  
ccaatcctctcagcccaccacttactccagccactgttgc

## &gt;IGR2201a

tccccaagtttgatgctgctgtttgttatgcaacatgcccttgagtttctatccaac  
actggagcttttaccaggtccatccacaccttctagcccaaatgccctgtgcaaatt  
gtatatagattaagacacctctgtgcaccacactcaaccccaatcctctcagcccacc  
acttactccagccactgttcagtgaccagttctgatgggctctggcaaccctacttca  
gccctgcaatgtattctcttctgtttctaccacgggacagaacttattgggactcat  
gcatgtgcagcctggaaacatgtggagctgacacctgtgggctgcctttacaaatggatg  
ccaacagagaaatgcttccccctttactcaagggtacagatggtgttgagatgcatttca  
taagcttctctgaagtccttctgttgatggagcatccctgccttgggtgctagtcaacct  
gaaaatgcattttgtattcagcctccctccttccctgttctcctcctgtcctttattgc  
tgctccctgggaatctgtccccaagcataaactgcttaactgcacagaagcactgtct  
cagtctctactttcaagggaacccaagatacatttgtgcaagaaggctggctcagcccat  
agtcaattaataaagtgaagaattctagtgcacaagaatc

## &gt;IGR2202a

cagcctccctccttccctgttctcctcctgtcctttattgctgctccctggaatcttgc  
cccaagcataaactgcttaactgcacagaagcacttgtctcagtctctactttcaaggg  
aaccaagatacatttgtgcaagaaggctggctcagcccatagtcattaataaagtga  
gaattctagtgcacaagaatcaaatcttagtcttagagattaatccaaccattgctaga  
attagcccaagctgatacagagaaaaggcagatgacagtgtggcacaggctcactaaatt  
ctagaaataaagattctaggcagttgctgatatttaaaaaatcatttacttattaaac  
tttctcatttcccaaggcacttcagtagctttcacaaaaacatgtttgttcttttaac  
caggtgaggcatatgctttaggagtaccatggtaacataatcagcaaagagaagacaatt  
acactgaacacaaaatatccccaataaagttacaggactaaagtgagctactctgaaag  
actatgaacacaatttaattctttttgtaatatcctccatgactaagtatcaagaa  
aggaacacacacaatgacactgttttggcacttagagaagtctagaggctagggctgg  
taaggccttgccaccagtggcagctgcagacaattgccaga

## &gt;IGR2203a

acccaataaagttacaggactaaagtgagctactctgaaagactatgaacacaatttaaa  
tttctttttgtaataatcctcccatgactaagtatcaagaaaggaacacacacaatgaca  
ctgttttggcacttagagaagtgttagaggctagggctggttaaggccttgccaccagtgg  
cagctgcagacaattgccagagtattctgtgttaaaaaaaaaaaaaaaaaagacacaaa  
ccaggaggctaaggaaccagccttcccaagtgacttctgaagggaataacaaggaga  
aaaggataacaacaacaaataaacagtaaaacaaaaccacattacagctttgagag  
aaaagacaacgttgctcatctctcactgataaatttctttaaacatacataagac  
gctatagtagcaaggaggttccacagcagtggaacaaagaatagtagattcaatggag  
catttattatgagcctggacaagcccagtgtttgatcagatgtaacaagtctactcag

tcgtcatgctgagtggtcttaagagctcacacatcagtcgactttgctggtgatctgcat  
ctgctcattctgctccatcttcattaccttcactttccctagctctgcgctctcctgcc  
ctggggaagcaatgatccagttaatgtcctctgtaactga

>IGR2204a

caagcccagtgctttgatcagatgtaaacaagtctactcagtcgcatgctgagtggtct  
taagagctcacacatcagtcgactttgctggtgatctgcatctgctcattctgctccatc  
ttcattacctttcactttccctagctctgcgctctcctgccctggggaagcaatgatcca  
gttaatgtcctctgtaactgagaaaaggtaagaatcaaacctcttgcaattacttct  
ttcctctaaagttcaccactagaggggagtggggaaaggggtgggggacttagacctct  
agccttattaggggccttttcaagtagtctaaaattaaaatgtacatttagcatatgctt  
ctcacattcctccagatcactggttctagtgaataaactgctttggaggtgctga  
gtccatcattgtaatagtttaggacttagatgaagttgtctgtaggtagccccagtgccc  
tagaggaaggtggtgctctagggccatagtagcctctgagtggtgggtgccatccagga  
gcaagtcagacacaggtcaagaggacaaacagcaaggcctttgctactgaaggactcgg  
agtctgcacaagctggccatttctggcaagacagctttcctcttcagtttcccttac  
tggaagcgatgttagaaggctgtgcttttaaggattgtgg

>IGR2205a

agggccatagtagcctctgagtggtgggtgcccatccaggagcaagtcagacacaggtca  
agaggacaacagcaaaaggcctttgctactgaaggactcggagctgcacaagctggcca  
tttctggcaagacagcttttctcttcagtttctcccttactggaagcgatgttagaagg  
ctgtgcttttaaggattgtgggcctttcttgaccatctttaacatccttgtgtgacttg  
gagttttctgtgtttcattctataaaaaacaagcaaaaatatgtcagtaacacatttaa  
aaagatgctcccgcttccaaacaagaactgaggatatcttccctgggaagagaa  
tcttcgagcagattctgaaaggtttcttctagcctctgagttatccagtgaggctactgc  
catggagatgtgtatagtacatgtccacacaggaacagaccagagaggatgggctataa  
gtaagcaccttgccatttacaacctttaatggctaactagtcctatggtgtctgtgaga  
gggagtttgcgagtagctctattgtgaggggctcctgagacctggccagaccagacca  
gtgcatcaaacactgacagaggaggtcttcttaccctttgactcttagcatctggtcaatg  
gtgtctgggagtggggtaccgaagctctctgggagaaaca

>IGR2206a

caacctttaatggctaaactagtcctatggtgtctgtgagagggagtttgcgagtagctc  
tattgtgaggggctcctgagacctggccagaccagaccagtcgcatcaaacactgacaga  
ggaggtcttcttaccctttgactcttagcatctggtcaatggtgtctgggagtggggtac  
cgaagctctctgggagaaacaaggtgaggatggctgtcaggatggtcagacttcccatga  
gaatgtagggcaggaagcggctgtaggcacctatggcaaaagcagacggagcctcaggccc  
agggtcgcagttagacttggtctctcatctaccctttatgctcccaggactctggaagg  
ggatcactttccttcttggtctcacatctctcacagtctgagcagtcagattagaatctg  
gccttagacaggtttcagaaccagagctggcacaggcatgccagagcccagcagtg  
tccaccatgcaggggaggagtacaaagggcggttgaggagaagagctgggccatgctg  
attatctctatttctgggcatgctgattatcttatttaccaggttgggttccaagg  
aacctgaggtacttgcaggggatggaataactcttccacctctgcagatgtgtccag  
cccatgtgactctgccttcagattaggcaggggtgctttgc

## &gt;IGR2207a

gtacaaagggcggttgcaggagaagagctgggccatgctgattattcctatttctgggc  
catgctgattattctatttaccaggttgggttccaaggaacctgaggtactgtcca  
gggatggaaataactctccacctctgcagatgtgtcccagcccatgtgatctgccttca  
gattaggcagggtgcttttgccttgccttgagatctacatagcatgttcacaaagcactct  
gagtactctcagggtgggtgccaccctccctaaagaggtactggctagggtgaggtgagggga  
aaccacagggtgctatgaagacataattctgagaagagaaaactggagacctgtacataa  
aatggcatgggggtggatcttcacacaagataaaatcactctatagtgtctaggttataa  
taattttacgttcacagacctcttgcattggacatctttccctcatgttcttttaaac  
tctgattccaagaaatttccaactaagcacactggctccctaaaccactctgtagggt  
cttaggataaaggaattgtatgtctgtatggaaggcctgggatggctaaaacagaaacaa  
accctctaatttctcatcaatttctaggtaattctatagggtgttttccatttgaaagtg  
agggccagtgcactgggacaagaacccttcccgccaaag

## &gt;IGR2208a

tccaactaagcacactggctccctaaaccactctgtagggtcttaggataaaggaattgt  
agtctctgatggaaggcctgggatggctaaaacagaaacaaaccctctaatttctc  
aatttctaggtaatctatagggtgttttccatttgaaagtgagggccagtgcactgggac  
aagaacccttcccgccaaagatccagtactggatggagcccatgtactgtatgaactg  
tttctgttaacacgcaacctccagctcacattcaagccagttagtacttccatccgt  
tgctctagtgtgcccttggctcatgggacttaccaggtaaacgaagtagggagacagga  
tgctgccagggcgggatgtgtggagctgactcccacacctgtttctcaccactgtgg  
gatacagctcggctgtgtacacgtagaccatggaaaaggcagccgtgactccaaacttgc  
ccaccatcaccaggactgtagccaataatacaagtctggagaagcaaaggaaagaggggt  
aggagtaggtaccaacctatggcatgcagctattgagagcaaaacaaacatactttctc  
ccaaatttttggggagtcagttctatcacttctattgtgggggaaggggctatagcc  
aagatttccctccaaattgattgctgaaaggaggctggga

## &gt;IGR2209a

agccaaataatacaagtctggagaagcaaaggaaagagggtaggagtaggtaccaacca  
tggeatgcagctattgagagcaaaacaaacatactttctccaaatttttggggagt  
agtttctatcacttctattgtgggggaaggggctatagccaagatttccctccaaattg  
attgctgaaaggaggctgggacctgcagctataaggacatgcacttctcaacctggag  
accaccagagtaagctccttaatagtccaatcaacctgcttccagctataagtcatta  
aagacatgtctgtcagggattaactgtcaccacagaacctcacactgcaggcactatgga  
attaactcatgatgtttgatgaatggagaattcagttctaactcatttcattgtttct  
cccactcagacctcaaaaaaatcataggccatcagaatctcaggtgatcttctaattc  
tctgtgtgtgtgatgggagagctatgtgtacctgaaggctcactctgagctcagctgt  
gagcctctacatcagttctgggctcctcctgccacatccatggggagctgttcccgtgc  
agtgttctcagctgtatggggccaaaagtaccatcagaggctcccaaatctacaggtac  
actgaagtctctgggcacagtgatggagaggagagatga

## &gt;IGR2210a

agagctatgtgtacctgaaggctcactctgagctcagctgtgagcctctacatcagttct  
gggctcctcctgccacatcccatggggagctgttccgtgcagtggtctcagcctgatgg

gccccaaagtgaccatcagaggctcccaaactacaggtacactgaagtctctgggcaca  
gtgatggagagggagagatgagggcccatgaactgttctataaattattggaaatggcta  
cctcccaccatctgtgggatactaagatagtttcagaaataaaatcctgctaagggct  
gtgaggccctctcagtggtctggccccctccccttctccctcctcctcaaacatgccaggc  
tcaccccctgctcagggctcgtgcctttgccatttcttctcctaaaatgttctcctaga  
cttttcagggcttctgtcactttatgtacatttctactgaactgccccctgttcaggg  
acactatctgtgactatgtaaactaactcggcattgtccttcatttgattcctagaagg  
taacacagctcgaactatattaagcattttatttactgtttgtgtctgtcttctc  
taggggtgtacgttccatgagggcctgggggtctgcctggctgtttctgtgtatcgtt  
atcaccgagcacagtgcccccagccatgtaggcacatgcat

>IGR2211a

aaactaactcggcattgtccttcattgtattcctagaaggtaacacagctgaactata  
ttaagcattttatttactgtttgtgtctgtcttctcactaggggtgtacgttccatga  
gggcctgggggttctgcctggctgttttctgtgtatcgttatcaccgagcacagtgcc  
agcccatggttagcatgccatagctattgtgaataaataaagaagacagggccaggaa  
aaaaaggaatgggatagctatttctccctcttctctgcagtggaaaacagtatgagca  
cattaactgggtacagagtaaaattaaccaacagcccaatggctgcttttccactc  
cctcaaagcccagggccataagtgttctagtctcagaagacactttctattgattttag  
ccaagaatgtatataagcaagggagctgtgatgggcttgattttattctctttattaatt  
gagacagcctggtagacagtaagagactcagtgaagaccccaaacatagatgcacatgg  
tcctacctgggggtaccagctgcatgaagagaaggacactgccaccaggaagaggggca  
gtggccatggaatagcgccggggcaaatattgcagcagcagccaggccaacacatatgt  
gggacttcaaccatcgtgaaaggaagcagttcacaaga

>IGR2212a

taagagactcagtgaagaccccaaacatagatgcacatggtcctacctgggggtacca  
gctgcatgaagagaaggacactgccaccaggaagagggcagtgcccatggaatagcgcc  
ggggcaaatattgcagcagcagccaggccaacacatatgctgggacttcaaccatcgctg  
aaaggaagcagttcacaaagatgtcccatgcaagttaggagtatcaagcgaaagcccaa  
aatagcccactgatatggtcatcctgaaacagagtgcagaagaaagctggaaaagcagta  
tccacatcttccaacctgtacaactttacaatgcaattatttcagtaaaattccaac  
catcttaagcagagactagtaaggcagcagtaactgtaaccctgcgtcttacttcatag  
atcaaaagataattttcccagcccaagtgggtacagtgtaaaccctgcgccagtgcgctc  
tcagagccttccatagacagtgtccagcaaaaaagcttgataattcagatagattt  
acttcattgaaaagaaaaattccaacctgcctttcagctttaaatacctaagctgaacc  
tctcaaatccagcaactgcagaaggagctagagaatgagtcaggaggcagacatcaagt  
gaggtgtgataggatttgggggataagataacaaaaggaa

>IGR2213a

cagtgtcccagcaaaaaagcttgataattcagatagatttacttcattgaaaagaaaa  
ttccaacctgcctttcagctttaaatacctaagctgaacctcctcaaatccagcaactg  
cagaaggagctagagaatgagtcaggaggcagacatcaagtgggtgtgataggatttgg  
gggataagataacaaaaggaacaacattaggtcaaacacttgagagagaccctcacaca  
ctacctgtggtgaccagtcaggaagaggctgggtcagagacagctgacaccagccccgcgg

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.



tacttgtggagcagagaggtggctcccaatggagggggccacactgcctctcatcaggatg  
ccctgcagtaccctgacctgggcatcccagtaggcattctctgttgatgaccaca  
ctctttgacaaaccagacctttatggattagactgtttgactcatctgcaggtggaaca  
cacagctggtacaataaaaagagtatgtgcatgagtcgccaggaatccagagcagggag  
gagagcctgggtgaacacaaaagtgggtgactcatcacaggcttgcattgtgtgtgca  
ggctacatgctgctcctgtcttgaggccaactcagggaatggtgaactgcctggagggat  
cctgggccattccttgaagcgggtgactcatagcactcc

>IGR2214a

agagtatgtgcatgagtcgccaggaatccagagcagggaggagagcctgggtgaacaca  
aaagtgggtgactcatcacaggcttgcattgtgtgtgagcaggtacatgctgctcctgt  
cttgaggccaactcagggaatggtgaactgcctggagggatcctgggccattccttgaa  
gcgggtgactcatagcactccctcagtaggcacagtggctgactgcctcaaagctggatg  
agactagtaataaggactctgagatgaagtcgcctcctcgcctcctcctcaccgcta  
accaccaggtccagaagtcgcctagaatccagggttcggccgctgagcaaaagctag  
cgatgtgcacttggacatgttccctcctcctggtaattcacaaatccctttctgacatac  
tttgccctcattagtgggaacctggaaggacatctaggctatagccctgactccaggacc  
gttlatggacatcccaggaggagcacatccactccacattccagaaagtaactggca  
gcctctgcagcctacaggacatggtgtcttcactcagatccttctaaaagccctacctg  
gcctcctcagccactgtcggtaactgggtaggagacgggaactaaatgacccaaattggg  
caaggattcatcttaagatctggagagattccccacgaga

>IGR2215a

ggagcacatcccacttccacattccagaaagtaactggcagcctctgcagcctacagga  
catggtgtcttcactcagatccttctaaaagccctacctggcctcctcagccactgtc  
gtaactgggtaggagacgggaactaaatgacccaaattgggcaaggattcatcttaagat  
ctggagagattccccacgagagtccatatttccacacagcctccacaattgtttcat  
tctcctttctgaggtccatccattaagaattgtgacatgccatttttccatctaa  
cacaagacatatccttttactctctgatgacataggcttgaattttgtctgaggcatg  
tctgtaaacaaggagcccaatggccacttcaagaagctttgtctggaagcctcaggcagg  
tctcttttacataccacagcattatggacatgatggtgaccatccggatattccaggtc  
gaagcagatccagaatgttgtgggactgctgcttcttgaacttaggtcttgaactgca  
ggaacaacatcataagtgtatgggaagaagggtggtcagagactcagagcacacaataa  
catacttgaatccctggcatcttagctgtctgcatctcagcgtcggggagtgttacgttt  
ctaagaacagtaagtatactgactgtgttttaggctgtga

>IGR2216a

gtgggactgctgcttcttgaacttaggtcttgaactgcaggaacaacatcataagtgt  
atgggaagaagggtggtcagagactcagagcacacaataacatactgaatccctggca  
tcttagctgtctgcatctcagcgtcggggagtgttacgtttctaagaacagtaagtatac  
tgactgtgttttaggctgtgaaaacttccctaggccttgcagtaacaaatcagagttaa  
tgaaaatgaggaagaaagtaagtaccagtcctcaagggtacaggaagacagaggccagg  
ctgacagcttctcactgcacccccacatattctgtcgggtggccacattccaaggagc  
ctctaagtattctcccgaggcctgctccttgcctctgggtcagagagagtacctggc  
tgtgtggtttattggtctgatatttttaaaagttaattgtttgagtccttatactatgt

agttactggtgtgcttccagggaaaaagaattcaaatagaaaaacaggaaaattgacctg  
agcttcaccagagtgacttctatgaaattcagcacagccaaggccattaataaaccac  
acgtctaacacactgatgttcttcttaagcaaaccagggttggagcttgttttcc  
agagftagaagttcaacaaaagggtcaactttggactgaaa

#### >IGR2217a

gggaaaaagaattcaaatagaaaaacaggaaaattgacctgagcttcaccagagtgact  
tcctatgaaattcagcacagccaaggccattaataaaccacacgtctaacacactgatg  
ttgcttcttaagcaaaccagggttggagcttgttttccagagftagaagttcaacaa  
aagggtcaactttggactgaaagtatccctgaaatagcctcatttctcaaatgaccag  
tggggcttatgattcaccagattgaccttacttaaaagcccccacacctaac  
ttaaagccctctgccacactcctgcctgacctttgcgcacaggaccttctgtgtgca  
tgctgacagtggctgctgggccaccactcactgggaagtctgcagggtggcagtgccca  
ttggcctccgctgtctacaataactgttcccttttccaagccaacctgctgctc  
tcacactcagcagggtgcttgtggctgttccacaccaacccctcatcttccagtca  
gaccacagacattccagaaccccaccaggcagcatttacagcttcaacctctcatag  
tcacgagaccaaggaaaactgcctgtacagagatggttaggagaggggaacgggaaggaaa  
agcaagaaccaggaactaggttagagccaagaaatgagtca

#### >IGR2218a

cttgtggctgttccacaccaacccctcatcttccagtcagaccacagacacattccag  
aaccaccaggcagcatttacagcttcaacctctcatagtcacgagaccaaggaaaac  
tgctgtctacagagatggttaggagaggggaacgggaaggaaaagcaagaaccaggaactag  
gtagagccaagaaatgagtcattgtgtgagaacagggtgacgggaggggtggggttag  
ggggaagaggtggacatcaaaaaggacctgactccaagatgatatgaataattaacct  
tggagggcagaaaagagactaaacacttttttcttttaataaattgctaataact  
caagagatgaaatacttcaactccaatctatttgtgctttacattttacgttgggggt  
tagctttgtaagggtgacaagccaccttaggtataagaaacaatgattttccaaatgctg  
actttatgaaaggcctattactcaaaaagagtattattgttagaagtaattggttaaat  
atatgattgcctagaaggaagtaaaaaatgaaaatctgaaaccgtggtgaaaagagtg  
aggcagctgtaacctattctcaacttctgagtgttaacagggccctgtgggggtgggg  
agtggggggatgggggggaatgggcagttggggcttgggca

#### >IGR2219a

actcaaaaagagttatttgttagaagtaattggttaaatatatgattgcctagaagg  
aagtaaaaaatgaaatctgaaaccgtggtgaaaagagtgaggcagctgtaacctattc  
ctcaacttctgagtgttaacaggggccctgttgggggtggggagtggggggatggggggaa  
tgggcagttggggcttgggcagagagagggtgggctgctgtgagcaggagagactcag  
ggctgggtgctgctctcaaatcacggtcagtctgtccctctcaccacacccacatg  
gtgcttacctcactcgggtcaaatagtggaaggcacaacaatccattggcttggca  
gccttgcggatgatcacctctgcctcttcaaatctccctgagagatgagccatcggggg  
gactcagggtgaaacctggcagtagaaggtccaatctcagtaggcctcctgccaacag  
cagaccacagaccaggtagagcacagccataggtgggaataaggtgcagaaccagagc  
ttgtggaatgttgggtgacacaagccagaagcaagagctgatccacacgagcaataa  
cctgggggtggatgagcttatgtgtacccacaccgcacaaaatgggagagccctgcacc

ccctgacggcatccccatgctggctggccacctccatttc

>IGR2220a

gagcacagccataggtgggaataaggttgcagaaccagagcttgggaatgtttggtgat  
cacaagccagaagcaaaagagctgatccacacgcagcaataacctggggtggatgagctta  
tgtgtacccacaccgcacaaaaatgggagagccctgcacccctgacggcatccccatg  
ctggctggccacctccatttctgaagagcagtgttgcacatctgctgggctgaggagatgg  
gtgcaagatgggctccggaagcctggcttctgtgcatgtctatgtcagcccaggccctgc  
tacactctcctccctgtccccggcaccaacagaagcttctgactggccttttagcttct  
cttctctcctcaccctacccctgatttatccaacagattagtcagatactctacctaata  
tagcatgtttggccaggtgcagtgggtcactcctataatcccagcacttttaggaggccaa  
ggccggtggatcatttgaggctaggagtccagaccagcctggccaacgcagtgaacccc  
gtctctccaaagaaatacaaaaaaattagccaagtgcggtggcaggcacctgtagtccc  
agctactcgggaggtgagacatgagaatcgctgaactggggaggcggaggttgcagta  
agtggaaatcacgccactgcactacagcctgggcaacaga

>IGR2221a

gctaggaggtccagaccagcctggccaacgcagtgaacccgtctctccaaagaaataca  
aaaaaattagccaagtgcggtggcaggcacctgtagtcccagctactcgggagggtgag  
acatgagaatcgcttgaactggggaggcggaggttgcagtaagtggaaatcacgccactg  
cactacagcctgggcaacagagacttctgtgagaaaaaaaaaagaaaaaaaaagaaaaa  
gaaaagaaaaaaggaaaaaattagcatgtttatcaaggcacttgagtgtctatggat  
attattttccacctgtgtgggaccaggtagccgccccccaccctcggatgactggggc  
ccatgatgtgcggttactctccactatgccctgaaatgctctctgctccacttgggct  
gggtatctcacttctccactgcaaggggtgattccaccttagcacctctgcagtgtt  
cccccttgggtctggaatggcctcttctctgcctgttcaactcctctaccttgggtgtgc  
agaaggagcctggcttctccatgtggctaccctgaggactcttgcctttgggtgccagt  
cctgtggcatgaggcttcagcagcacagccagaactagggcctacactgtcctgcct  
gaggcttgggaacttctacagggcatgctggaccccatc

>IGR2222a

gcctctctctgcctgttcaactcctctaccttgggtggcagaaggagcctggcttct  
ccatgtggctaccctgaggactcttgcctttgggtgccagtgcctgtggcatgaggctca  
gcagcacacagccagaactagggcctacactgtcctgccctgaggcttgggaacttcta  
cagggcatgctggaccccatcttctcacagctactgctattttcccacacttggggca  
accagcacagggtgagagcaagtctgttgcctgtcatgggattctgtttgtttggct  
ctttgagtgtggagaaaacattctgaataatttataatctatgcttctgtctctggg  
agacaaaatagggatcatgggtgttgcctctagtgaaggccagacagaaatcat  
cctgccagtgggcacatggggcacagggtcacactcaccaccagagtccacgcacagca  
ccccggcatctcagcggccaccagcagcatccgccagtctcgatgaagtaagcaaca  
gtggcagccatgtagccaaatgcataaaatgcacactcctaacgtagagaatatta  
tacgaactgacttccaagaatttctgtccctgttcaaaacaaggaggtcgagttagca  
gtttaatttgggtccttcttattataatttttatggat

>IGR2223a

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

caccagcagcatccgccagtctcgatgaagtaagcaaacagtggcagcaccatgtagcc  
aatgcataaaatagcacactcctaacgtagagaatattatacgaactgacttgccaag  
aatttctgtccctgttcaaaacaaggagggtcaggttagcagtttaatttgggttccttc  
cttattaattttttatggtatctttgtgaatacacagacaagaaaacagcgagaactctc  
tctaagttcatggcgctagggagcggatggcgttctgaacccctcctgtctgactgtctc  
ctgggggtacatccctgtggcctctcagggccccaagcaacagttctcttgaataatt  
cgccatgttctgaagccatgtgctaagatgccatggtagggccctttaacctcacaat  
gaggaagaatttattaaaagtgaagtcattactaagtcagcacatgtgacttaagcctc  
aaggaaagaatattataataaaaaagaaaaaacaaccccttcaacaatacaaccaagga  
actcaaaggccttatcagctagagtcaggttctccaacacaggccggcctggcagctt  
ctcagtgcacaacaggctggcacattgagacaaagccctgcagtgtgcactctgaattaa  
aacccctgaagggtgacgaaagcccttctatcaattatt

>IGR2224a

taaaaagaaaaaacaaccccttcaacaatacaaccaaggaactcaaaggccttatcagc  
tagagtcaggttctccaacacaggccggcctggcagcttctcagtgcacaacaggctgg  
cacattgagacaaagccctgcagtgtgcactctgaattaaaacccctgaagggtgacgaaa  
gccccttctatcaattattctgtccgtagatataccagccacagtgtctgcagac  
aagggtgtctctaccttagcaagcttgccagtcacagccctctctccaaccatgccg  
ccctcttctgggggtggcctcagccctgtgcagtggcagggcccttttgaatggagga  
tctctggtgagtcctagtaaattgactaccaagtaagtaaggaaggagccacagcccag  
aggccagaaaaagaactggaaatcagaagtcaggccattgtgtgtggggagcccaggct  
ggctctatgtctggctcagttccctgcctgtaagtaaggttcaccaggaagcttggct  
agttttgttagaaacccctgtcccttgaggagacacacagctgtctccagaaggtagg  
tgatgggatgatggtgaaatacaggatcaagtactcaactccaacctgatggccataccc  
aggacaaatgctgccacatagttggagatctggcccatgc

>IGR2225a

ttccctgcctgtaagtaaggttcaccaggaagctctggctagttttgttagaaacccctg  
tcccccttgaggacatcacagctgtctccagaaggtaggtgatgggatgatggtgaaa  
tacaggatcaagtaactcaactccaacctgatggccatacccaggacaaatgctccacat  
agttggagatctggccatgcctacaaggacaacagcacgacaaacatctcaaaattct  
tcgagaagatctgcaggaagctgaagcctgtctgcacatggcctcagcaacagcacat  
tcttccggccaaacctgggaagaaaaggagagtgacagataaccagctggaaaagggcag  
caggaatgggctccaccaagtggggcttctcaagatccatccagtaagtgggtgtgaac  
agtgttgcagaatactggctgccaggacagctctgggtcacagtgcccatgctattt  
ctccccctccccactccccatgacaaatgtacagcctgggtaccagggttgcctaaaaag  
caatgctacaattatgataatgattgcaagagactgaatacatcaattatttaaccat  
acattcataatgatatTTTTTAAAAAagaatctgccaatttggagaataacagagaa  
acaattcattataaatgaaaactggcaataaagagaaag

>IGR2226a

atgacaaatgtacagcctgggtaccagggttgcctaaaaagcaatgctacaattatgata  
atgattgcaagagactgaaatacatcaattatttaaccatacattcataatgatatTTT  
TTTTAAAAAagaatctgccaatttggagaataacagagaaacaattcattataaatgaa

aactggcaataaagagaaagaagcatttgcctgatttcccttgtaaactatgtgaac  
 agcaaccaataatagataagaggtatcatgtacaaaagtattctaacttttaaatga  
 aaaggtataaaaattagaataataccatttatagccccaatggattaatagatctatgc  
 attatataactaattactgttaacatcataaagagacagtcaggaattgcatgcttctat  
 ggtcttgccaaaaggactgaacctgaatcagaacctgaatctcaagtccttgatccaac  
 tgccaattttgaggaaatgcagagcatagaggaaatgtgctgaactgcatcatcagtgctc  
 aatcaacaaatccagactgggaaattctataggtggaatagctcaggttctcatagata  
 atcagtaaggcatagaaggcgatagaaggagaatccatagattaagtagactaaaagaca  
 tcaaatatattaagtgggcaacactaaatttgtgtcaagg

# >IGR2227a

cagagcatagaggaaatgtgctgaactgcatcatcagtgctgaatcaacaaatccagactg  
 ggaaattctataggtggaatagctcaggttctcatagataatcagtaaggcatagaagg  
 cgatagaaggagaatccatagattaagtagactaaaagacatcaaatatattaagtgggc  
 aacactaaatttgtgtcaaggatgcatatttcgataataaaactaaaaaactcacaagg  
 aagtgtatttacaggagtcaggctagcggttacttaatggggagagagagaggatgctg  
 taattgggatggggcacatggacagggttcttagtgacagcaaagtctactgctcga  
 ctgtgtggtggtcataagggtatttctctgaaaaaattcattaagctacacatttgctc  
 tgtgtggtttctgtatccgtgctcattttaaaagttttaaaattgggtttattttgg  
 tttgtttaaagagagtgccacaaacaggaggaaaaagtcaagctagtgggaagcagtggtg  
 gttcagtttgagcttgccagtagctggctgacaccactttcattcaatgtttattgagc  
 atctattatagagggcacttgatataataaaataaaaaagatgctgttctgccctta  
 aggagtgtcatagtataactggtgaaacacataattaacca

# >IGR2228a

cacaaacaggaggaaaaagtcaagctagtgggaagcagtggttcagtttgagcttgccc  
 agtactggctgacaccactttcattcaatgtttattgagcatctattatagagggcact  
 tggatatcaataaaataaaaaagatgctgttctgcccttaaggagtgtcatagtataac  
 tgggtgaacacataattaaccacattttaatctaacaacacgctactgaatatacaattac  
 acactgagtcagtgactgaaggatcggcatgcaggttaatgagaggcacaaggaagga  
 agctaccctggactgggggtaagggttggggaactggacattcaggagggtctccttga  
 tcatgggacactgagatgggaaaaaatagttgacgatgggggatttaagggttagggacc  
 aagctctcaatgatattcacagtatagtggggaagaccaacattaatcctataataacac  
 ttttttccccaatttctggttagacgttttaaggaaagtcataaggaactagggatcc  
 tgaattagccagcatggttaagaaggccacaggggtgggttgggtgggtggggaatg  
 cttcagactctgagaagaccacacaccccatggctggagggggcatggtgaacatgagg  
 aaccagtgtggttggcatcaggcgtgcaattcaagagtac

# >IGR2229a

ggtagacgttttaaggaaagtcataaggaactagggatcctgaattagccagcatggtt  
 aaagaaggccacaggggtgggttgggttgggtggggaatgcttcagactctgagaagac  
 cacacaccccatggctggaggggcatggtgaacatgaggaaccagtgtggttggcatc  
 aggcgtgcaattcaagagtacagtggtggctaggaggcacaattgcacaaggcttgcac  
 tatgtggaagagtttggtgttttctcaataaaagaggttttttctgtgtgtttt  
 ttttccatcacttgggttctactggcatcattagtagaggccagatatgtgtttaa

tattctaaaatgccaggaaaatgccctagaacaaaattatttggctcaaatgtaata  
gggtcgagggtgagaaactctgcctggtagtagactctacttcccctgcatggtttt  
ttaacaagcatgttctatatgccaccaaggggtggttctaaccacaaggcaggctggt  
ataatctctatgcccttcccctcctaagagctccctgggatggtagggaagagacagat  
ccagagaacctttacatagcaccagtccttggcagttcagggttggggccagaaatgtt  
tgcttttaaagctgtcaacaaaatggcaaacacacacat

>IGR2230a

tgccaccaaggggtggttctaaccacaaggcaggctggtataatctctatgcccttc  
ccttctaagagctccctgggatggtagggaagagacagatccagagaacctttacata  
gcaccagtccttggcagttcagggttggggccagaaatgtttgctttaaagtctgtcaa  
caaatggcaaacacacacatacctggaacaggacacagcagtcacttcttcttagag  
ttgtgcactcttacaagtcagacgcataaagataactcaatagtgttacataaagggt  
ttgacaacccaggagtagtcttaattgctcttgaatttcagacatattcataggccagaaa  
gaagggtgaacacctttatactatataaaaagtacattgatgtcctagacaagttaggga  
tgaattgattgcttcaggtaactctacttagcttaggtttagaactggttactcagaa  
gtaatgcactcagaagctgtccatcccacagggccctgggccttccaagggggcacagac  
aggcttgaggcagggcattgggaattgaaggcaggggtgcaggcagaacagccatactt  
ttagccacttagggtgtatttcatttactagactaaattatcctactttaatgaaagtt  
ctgtggccaaaatgtttagaaagggttgaaaaacactata

>IGR2231a

tccatcccacagggccctgggccttccaagggggcacagacaggcttgaggcagggcatt  
gggaattgaaggcaggggtgcaggcagaacagccatacttttagccacttagggtgtat  
ttcatttactagacttaaattatcctactttaatgaaagtctgtggccaaaatgttag  
aaagggttgaaaaacactatattagcccttctgtagactaaagtggctcctaaacacactc  
acaaattttgttccactttccctgggaatagaccttttgaacttaaatgcttctca  
ggtaatcattgtgtcacatggcaagaagggttcttaagctgacctgacacagctgacct  
agaaaaatacactgcatttctacttgaacttggggatctccttttcacatcaagggca  
ttcttctgagccgcagctgtcacttagctccgtgagaaggaatcctcatgtccactcag  
gtggcctetaagcatagcacaaatctccccagttccccctccccctccactccccctc  
tccccaggcaacctcatccctatctggggctctgctgagggttctatatgctgacaaatc  
ctacatgtgtttcttagccaaaacctctcatgcagtaccatatccatacagccagcttc  
acactctacttctccacttaggggtctcatagtcacccca

>IGR2232a

caatcctccccagttccccctccccctccccactccccctctccccaggcaacctcatcc  
ctatctggggctctgctgagggttctatatgctgacaaatcctacatgtgttctctagc  
caaaacctctcatgcagtaccatatccatacagccagcttcacacttacttctccactt  
aggggtctcatagtcaccccaaattagtacacacaaattgaactcaatatccatgaacg  
tggttctttccagcattctctgtcttagagaagtgtaccttattcaccagttactca  
ggccagaaagcttcttcccccaattccgacatccagccatcggaagtcttgttgatt  
ttaccttaccacttccctccatttctaccaccgtcatgctaggccatgccaccatcat  
ctctggcatgaactactgtgacaaccttttaattgggtctcttacaacaccttttgcttc  
ccttcaattcttctcacaagggtgtcaaaagcatcttataaaaaaaaaaaggacaaat

ctgattgtcacactattgctttaaaaaatctcagtagcccaccgctgctctgtggctgaa  
gccccaaagtctaactgtgatccactaagccctgggtgctcatctgccagggtcttgc  
tgcctctccccctcatcttaacaccactctccgcacctct

## &gt;IGR2233a

aaggttgtaaagcatctttaaaaaaaaaaaggacaaatctgattgtcacactattgc  
ttaaaaaatctcagtagcccaccgctgctctgtggctgaagcccaagtcctaactgtg  
atccactaagccctgggtgctcatctgccagggtctgctgctctccccctcatct  
aacaccactctccgcacctctaccacacggacttggctgctccatgcctttcatga  
gccccggcttagcacttgcattctccctgctggatgttcttctctctaccct  
cagctggctacttgcactcatctccactctcgtcatgcttcacttctcagggatg  
ctccccctgacctctctgttagacactcctgtggcaccctgcacttctctgtatctt  
accatggccaaaggacaacaacgacttctcacttgggtgttaatacattccacctgct  
agaaagcaagtttaggacagcaggacctaagaacagtagtcatacacaatagaggagc  
aagactacctgggtccaaatcctaactctgccacttggcagctgtgaaacctggggaag  
ttatttaacacctctgtctcactttctccatctgtaaagtaggaataataaacaggtaa  
cctgcttttaaaaaaaatctggctgggcagggtgcagt

## &gt;IGR2234a

agcaggacctaagaacagtagtccatacacaatagaggagcaagactacctgggtccaaa  
tcctaactctgccacttggcagctgtgaaacctggggaagtatttaacacctctgtct  
cactttctccatctgtaaagtaggaataataaacagggttaacctgcttttaaaaaaaa  
tctggctgggcagggtgcagtggctcgcgcctgtaatcccagcacttgggaggccgaggt  
gggtggatcacctgaggtcgggagttgagaccagcctgaccaacatggagaaacctgt  
ctctataaaaaatacaaaattagctgggcattggtgctgctgtaatcccagcaact  
caggaggctgagacaggagaatctctgaacctgggaggcagaggtgcagtgcagccgag  
atctgcccattgcactccagcctgggtaacaagagtgaacctctttccaaaaaaaac  
aacaacaataaaaaatcttggctgcgcattggtgtctcagcctgtaatcccagcactt  
gggaggttatggaggaggattgctgaggccaggaattaaaaccagggaagatgctgg  
gactcctttccaccggctaaccaccgatttgggggtgttctcacatgtgcatgtggc  
caaggacttgcagaaggtgctactctctcacagtcttc

## &gt;IGR2235a

tggctgcgcattggtgtctcacgcctgtaatcccagcacttgggaggttatggaggagg  
attgcttgaggccaggaattaaaaccagggaagatgctgggactctttccaccggcta  
accaccgatttgggggtgttctcacatgtgcatgtggccaaggacttgcgaaggct  
gctactctctcacagtcttctgacagaccctgaagctccagggaagaagacacaac  
ataatggaccctctaagaactcatgaaagctacggacctctctccaaaaaatgctca  
catgtagtcttaacattgtgcataataattcagggggttgggattcttaagccgta  
atgttctctgagttaaaagctttagaattatacaataacctgcttataagaaatggat  
caaaacactattctccctctgtcataaagtaaatgccaaaaccacaggccacttagcta  
aggggcatcagcctgtggacaaaagagtctgtttcataccactagtggctggtgag  
agctcctttcacttgcagagagaatgctggtcttctgggactacagaggcagacaccg  
tggcactactacagatctacaatctagcacatgtgcatgtgtgcatgtcaacctctc  
ccatgctcaggggcatgacagagtcacagtgaccagggg

## &gt;IGR2236a

acaaaagagttctgctttcataccactagtggctggtgagagctcctttcactttgcag  
agagaatgctggctcttctgggactacagaggcagacaccgtggcactactacagatcta  
caatctagcacatgtgcatgtgtgcatgatgtcaacctctcccatgctcaggggcatgac  
agagtcacagtgaccaggggaggcaagccaggctactgcagaagtgaatcatggcatat  
tacctagtcaaccggatcacagatacattcagcttagacagctcaggtttcttacttag  
caagaattacggagtcagatgattgttggtcttcttactaggcatggagtctatatca  
cagacatagcttctcttctttaaatacagggccctgcgctgaaagaatactaccaact  
gaaatcaaggggccaggcacacgcttcttctcagtgctgaggtccctggtgctccagaa  
gacagacaccttacctgtctgacagctgccctgaaatgaaggagcccaacagcacacca  
cgaagaacaaggagattgtgagtggggccttccagtcgtcctcacacaccaggttccact  
gcaagatgagcaaaaggggtgtatcattcacttctttttaaagggttttaagcaaagggc  
atcctggaaaatgaagtcagaacatcctgccatccccaca

## &gt;IGR2237a

tgacagctgccctgaaatgaaggagcccaacagcacaccacgaagaacaaggagattgt  
gagtggggccttccagtcgtcctcacacaccaggttccactgcaagatgagcaaaagggg  
tgtatcattcacttctttttaaagggttttaagcaaaggcatcctggaaaatgaagtca  
gaacatcctgccatccccacacgctctgagtgtaactcacttagtcaggtgatggctca  
cctgggcaggaaggcagagagcaggcttcttccatcctgttttcatagcattgtagg  
ccccactgtctgtctccattttgaggaggagagacaggcagagagtaagtgttctgtcc  
acatgctgacctggagaaagcaaggccttaacgcttgcctctaaaaatctgagcggag  
cccagggtgtggaagaggcagggcacctcgtcagtggggttcaggccattggcatga  
acgtcactggagtggttctggaagcagggtctggggctctacgggccaagcatccagc  
aagaaactaaggccagggcacagagtgaccatctggacctgctctgctcaggttccac  
cctgggccaatgacccccgggtccttttgtgacctttagagctggaatccctgatgctg  
cacaccaactatactaggtcaattacagctgaaagccct

## &gt;IGR2238a

ggaagcagggtcttggggctctacgggccaagcatccagcaagaaactaaggccagggc  
acagagtgcaccatctggacctgctctgctcaggttccaccctgggccaatgacccccg  
ggctccttttgtgacctttagagctggaatccctgatgctgcacaccaactatactaggc  
tcaattacagctgaaagccctgagcttggaagtaagaaactgggttttagtcccactct  
actattaactcttccaacctcagataagcatcaccatgctgtgccttgatttcccat  
ttgtaaacagggaattgggtaaggaataggctgcaccgcttgagttccagcttccaat  
gtgtggttccatctatagttaccatgaacagaaaaagaggtctgaagacatggggaagca  
gccagacgcttgatctggctacgcctgcctaaacaagagccaaaagcaggaagaaagcc  
caaacgggaaacttagtggttcacagaaaaatgaaaaatgttttcagacagagagatgg  
tgctcagtagtaacctttgcagacttctacatgagcaaccacctcctaggaactcaga  
cccttgctccttggtgccagggtgctagcctgccctccacggagcctgctggctcctca  
ccaacaacgcaggcaaggggacatgcggctccctagaaca

## &gt;IGR2239a

ttcacagaaaaatgaaaaatgttttcagacagagagatggtgctcagtagtaaccttg  
cagacttctacatgagcaaccacctcctaggaactcagacccttgctcctctggtgcc





atgcttagctacatgcagttttatgtcatttacacctaataaagctattaaacatt  
ttaaaaagagggaattgtgtctctatacctatacataattggcactgcttttcag  
ttatgagaagtagagagatgacatagttccctgggactaaatgttcttacctgtgaattg  
gcaggaagggaagaaagataggggtgtgtgcccctaagacagaagtcttccctgagggga  
tgtacctagcctgaccgtatcaacagtcagacatgctgctaggtaccacatgttactgat  
tgccatgtattcctatattcctacacacattttatcctgcctcctgctgaaatcaatgat  
gaatccttgcaccaccgtgtgcagagcaaagagaaaagg

>IGR2243a

agggtgtgtgcccctaagacagaagtcttccctgaggggatgtacctagcctgaccgta  
tcaacagtcagacatgctgctaggtaccacatgttactgattgccatgtattcctatatt  
cctacacacattttatcctgcctcctgctgaaatcaatgatgaatccttgcaccaccgtt  
gtcagagcaaagagaaaaggatattcctatctttgctatcacatcctctacaactcctgg  
cagtgcacctgtatcgaagagaggctcaggagctctttggtacataggtgagtgaatga  
atcgataaataaaaagggtatcaacctcaacatcttggtatactttagttcttgcttggc  
tgcccaaagtcgagatgaacctgaactcctgaactcaatctccagaataactcttttt  
ttctttgaaacagagtcttgcctgtctcccaggctggagtgcagtggcacaatctcgg  
ctcactgcaacctccacctcccggttcaagtattctcatgcctcagcctcctgagtgg  
ctgggactacaggatgcaccaccagcctggctaattttttagtttttagtagagacggg  
gttttgccatgttgaccaggctggcttgaactctgacctcaggttatctgccaccttg  
gcctcccaaagccctgggattacaggcaagagccaccaca

>IGR2244a

cccggttcaagtattctcatgcctcagcctcctgagtggctgggactacagggatgca  
ccaccagcctggctaattttttagtttttagtagagacgggggtttgccatgttgaccag  
gctggtctgaactctgacctcaggttatctgccaccttggcctcccaaagccctggga  
ttacaggcaagagccaccacacctggccatttttttttggtccctgacccctgctt  
tgtgtcaactgtcagaaatttgaccaggatgacaggtgtcagctagctagagagtggct  
caatctgaccactcatggccagatgtgtctactatgtacgtgcatagtggggccacgggac  
cccgaagtggcttctgcttgcctatagctgcaaaaggctggatgagggtctgtgt  
gtccctgagttagagaaatcaaaaaggcgtaacagttaggttcaagtccaggtctct  
cgggtctctgctgccagagtcagccccggcctcagctcccaggtgctctggcttttc  
tccaggcagctttggggataacagtgagggtctctcatcttctaagactatctgtctct  
acacaagataaggctgatagaaaagctagtcaggacaatggggaggagtgaggagtc  
accaggactgggcccagggtctttagaagcagacaggt

>IGR2245a

gtcagccccggtcccagctcccaggtgctctggcttttctccaggcagctttggggat  
aacagtgagggtctctcatcttctaagactatctgtctctacacaagataaggctgata  
gaaaagctagtccaggacaattggggaggagtgaggagtcccaccaggactggccgagg  
gcttcttagaagcagacaggtggagagcaaggcgtgagagcagcttgaagtcttctt  
tcttttttttttttttagacggagtcttgccttgcacccaggctggcatgca  
atggtgcgatcttggctactgcaacccccacttcccaggttcaagaaattctcctgcctc  
agcctccctccgagtagctgggattacaggcaccgccaccacgcagggttaattttg  
tatttttagcggagacaggtttcacatgttggccaggctggtctgaactcctgcctt

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

gtgatccacctgcctcagcctcccaaagtgtgggttacaggcatgagccaccacacc  
agccggaagtttctcaaggaaacctgtctgtccataggctggacagagctatggtgaaacc  
aaagagcggacagcccagacaacctcagaacaaccaggttccagcagatggggcagt  
ccatggccaagaagcactgcatgatgggttggttaattcc

## &gt;IGR2246a

ctcccaaagtgtgggttacaggcatgagccaccacaccagccggaagtttctcaagg  
aacctgtctgtccataggctggacagagctatggtgaaaccaagagcggacagcccaga  
caacctcagaacaaccaggttccagcagatggggcagtcctgccaagaagcactg  
catgatgggttggttaattcccagtagccagggatgactgagggggccagaggagaggc  
cagccgagaacctgtggaccaccaactattcctggaacatgggggcataaaactctt  
tacctcataaatcattttatttattattattattatttctttgagatggagtctcg  
ctttgtgcccaggctagagtgcagaggctcgtctcggttactgcaaagccgcctcc  
tggttcaagcgatttctcctgctcagtcctccaagtagctgggaatacaggcatgtgcc  
accacaccagctaattttgtatttttagtagagatggagtccaccatgttgccaga  
ctggtctgaactcccgaacctcaagtacctgctgcttggttcccaaagtgtgggat  
tacaggcgtgagccaccagccctgccaatatttatttatttatttattttagcagatt  
ccctctgccaatcccaacacctcattccacatccatgtgg

## &gt;IGR2247a

tgtatttttagtagagatggagtccaccatgttgccagactggtcttgaactcccgac  
ctcaagtacctgtgcttggcttcccaaagtgtgggattacaggcgtgagccaccac  
gccctgccaatatttatttatttatttatttattttagcagattccctctgccaatcccaaca  
cctcattccacatccatgtggcatcaaagccccagtcagtgggcagggggagtcacatt  
cctttaaaaaattccagtcactctttcagccaccctcaagttcccttctaagaactg  
aactattttcttttagttctcaaacttttagagatgatttcttaattattcattaactca  
ttcaataaaaaatttctgagaacctccctctgcatccagaattgtgcagaaattgagg  
aagacgcaaatgactaaatccaccacaaagtttggtactacatgtatgtactttaactg  
aacaataaaaaaatccaaacaggacacctgaggttccagtcctcagtggaataaatat  
gactagtaattcaataccagtgacttacaacacctttatgtatgatttggggcagagg  
gcaggcttagagacatttagcaggcatgggactagatgcagtggtcagcaggccaggtt  
gggttgaaagacaacaggccatagaaaaagccattagaat

## &gt;IGR2248a

aacaggacacctgaggttccagtcctcagtggaataatgactagtaattcaatacca  
gtgtacttacaacacctttatgtatgatttggggcagagggcaggcttagagacattta  
gcaggcatgggactagatgcagtggtcagcaggccaggttgggttgaaagacaacaggc  
catagaaaaagccattagaatgttgatgcagcaactccagcagtagctgttcacctggg  
aacaagcagctctgaactcaagtcagcattccagtagcccaaaacaagatctaagca  
ttaatctggcctcctgcaagactgacaacatataagtaggtgaaagggcacataactc  
ctttgaaactgctaagacagctaaataaatagtctaaatattaaaaaacaaggctgac  
attggcagcaagataaggtcagacccctggcacagctggccttgggagctcatcaatg  
ccaccatcactcagcccaatgtgggatggaggcagcaaagcaggaacaagtgactagagt  
aagccggggaacctcaggggtcaatgtaaaactccaagagatgcatgtgcttcttctt  
gcttactacttcccttctttaggcagcccaagtagaattttagggattcctgtgt

catgttccccctctgtggcctctgcctgcaacctcagggac

>IGR2249a

tgtgggatggaggcagcaaagcaggaacaagtactagagtaagccggggaaccctcagg  
ggcfaatgtaaaactccaagagatgccatgtgtcttcttctgttctactacttccctctt  
ctttaggcagccccaagtagaattttagggattcctgtgtcatgttccctctgtggcc  
tctgcctgcaacctcaggagacagcctctgtttcatagtactactgttccgggaagg  
taacacacccacctgtgaggttaggaccaggatttgggcaactgaaagtccaatttc  
ctgtggattcatgggccagaaagcacagtgggtacctccaaggagtgcctctttgtca  
agccatgatgcctctggacactgaagctatgtcactagctaagaaatcccagtggggctc  
cggtcacactcccactacatatgtggagaaagcaggccaaatgctggggacatcaaa  
tttcaaaaaagaaaaaacacacacatgcacacacacttgatctcccagggtagctctca  
gactccattgaagggtgatgacgccaagaagcaacacagtgggatctccagagcccctg  
taagccccctctgaggtccaggaggggaggtcagcaccaacatccagcagggctgaag  
ctgtgccagggcctgtggcactctccctctctatgaactc

>IGR2250a

cacacatgcacacacacttgatctcccagggtagctctcagactccattgaagggtgat  
gacgccaagaagcaacacagttgggatctccagagcccctgtaagcccctctgaggtcc  
aggaggggaggtcagcaccaacatccagcagggcttgaagctgtccagggcctgtggc  
actctccctctctatgaactctccctctctgtgaactccgctcctgtgggtggtt  
cttgcctgtcattggggccttcagctactattatgtgagctgaacacctaggtca  
ctgagaggcctctctcttgggaagccttcttaacctgcgaattggtcatctgcacatt  
tagtgagcctatctatcaatgagggctactactggctacttactcaatgctgctgaaac  
ttcaggagctagagtgccagtgtctaaaaagacacaaaacacatacatattaacatc  
atgttctacatccagctccaacaactgtccaacaggttcggaggggacagacaaaacc  
accagaggggaaatccaaggggatgagaaatgagaaaggctccccacaccctatgacc  
taaggctgtatgctttaactaaatctggccgacagccttgccctataatacctgagaaaa  
tattccagggtcaacaagtcaccctgaacctcttcagat

>IGR2251a

caacaactgctccaacaggttcggaggggacagacaaaaccaccagagggaaaatcaa  
ggggatgagaaatgagaaaggctccccacaccctatgacctaggctgtatgctttaac  
taaactctggccgacagccttgccctcataatacctgagaaaatattccaggtcaacaagtc  
acctgaacctatctcagatgaatggatcttaagagtgacaactgacggcctggcgtg  
gtggctcagcgttgtaatcccagcttgcaggcagaagcaggcagatcacagggtcaaga  
gatcgagaccatcctggccaacacggtgaaacccgtcttactaaaaacacaaaaatta  
gctgggcgtcgtggctcacagctactcggaggtgaggcaggagaatcacttgagccgg  
aaggcgaagattgcagttagccaagaacgcacgactgcgaagggtgcagttagccaagaa  
cacacgactgcgctccagcctggtgacagagggagactctgtctcaaaaaaaaaaaaaa  
aaaaaagactgacaactgaccatgggaaaaggcaacaattacttacagggcattgacca  
gattgtcgttttgggtgtggacggtaggggaaggagtaactagaggaaaaagggaaga  
ggcagttgtatacatgctttatttaacttttaaaagt

>IGR2252a



&gt;IGR2256a

>IGR2257a

>IGR2258a

atTTTtaataaggaaTctaaacattTgcataaagcataatagacttaaaaaattatga  
taaagatgttatcacaggactTgtTgtTctTtatacttactattcactattcttactt  
cgtgaagatggatggttataccttcagcaatgtacttaaTccttctaacatcttatgtg  
aagttatagtTcttatctagaactaactgaaaaagaaagcaaaagctTcttgaaaataaac  
tcctTTTTgtgtgctaaaatatttttaatgcttcaaaagaaatgaaagcttttatga  
gaagaatgttgacctctgtccagaccaacaagatgaagaagTcttatTTtaacattTga

gaaatatcagttgggcatcagataacattcctgaaagggactgaaaacaatgcagtatac  
tacaaaaagaagctgcataatccttaggaagaaaagaactatttgcatagatggcttgc  
cacatgcgcaaagcagagagcaacctaaagatggtgccgtccagttccaggtgcactgtga  
ttactatctgaatgccattactatttaaattgcatttttttggagacaggggtctcctt  
ctgtcaccagcgtggagtgagtgaggtggtcttggtcactgcagcctcaacctcctg  
ggctcaagcaatcctcccacctgagccttccaagtgcctg

>IGR2259a

gcaacctaatggtgccgtccagttccaggtgcactgtgattactatctgaatgccatt  
actatttaaattgcatttttttggagacaggggtctccttctgtcaccagcgtggagt  
gcagtgaggtggtcttggtcactgcagcctcaacctcctgggtcaagcaatcctcca  
cctgagccttccaagtgcctgggactacagccacgcgcgctacaccagctattttt  
tgtattttggtagagacaggggtttgccattttggccaagctggtctcaaattcctgac  
ctcaagtgatccccctgttggcctcccaaagtactgggattataggtaggagccacca  
taccagccttaaattcatcttttaaagagaaagagagcttagaatttaaatcagta  
cctgaggccctttatcctgcaatattctgaattgggatgttctattttacataaaaa  
aatgtaaaactgatttatgttagataaacctacagttcagggctagaactttagatta  
aatgcattcatacctggcagatgtggtagcttgccccaagatggcacccaatgaatga  
tccctgtaccaggattggtctatgtgacaaaagcatagcattagtgatgatacttat  
atcacttgggtaattacattataaaagatgtccatcatgg

>IGR2260a

tggtagataacctacagttcagggctagaactttagattaaatgcattcataacctggc  
agatgtggtagcttgctccaagatggcacccaatgaatgatccctgtaccaggattggt  
ctatgtgacaaaagcatagcattagtgatgatacttatcacttgggtaattacat  
tataaaagatgtccatcatgggtgttctttcccttctcttgcagagacaagcaagc  
tgtcatgttataagcagccctttgaggggtccatgtgatgtcaaggaatgaagtcttag  
ccaacatttaattaggaactgaggccaccaacaaccttgagtgccttgggaagtagctc  
cttcagcatcagttgggtgtcagatgactactgacagcttgactgcaacttcatgagag  
tcttctggaccagaaccactcagttaagtggctcccagattcctgatcctcagaaactct  
gagaaataatgaatgttggtgttttaaaatggtaattttgaggtattatgttatgtgg  
caatagatagctaataatataaattattgaatcaacaatacgttaaattaaagctcaga  
agaataaacatctgaattccttaattgtttcccttctattctacagaatagaatttt  
acagatgaacctttagttacttgcgaataagagacagt

>IGR2261a

ttgttttaaaatggtaaatgttgggtattatgttatgtggcaatagatagctaataat  
aaattatttgaatcaacaatacgttaaattaaagctcagaagaataaacatctgaatt  
ccttaatttgtttcccttctattctacagaatagaattttacagatgaacctttagtt  
acttgcgaataagagacagtatgttgattgattaagtgcagagcctctggatgtatga  
tagaagaaagaccaatattcaattgcttcttcttcaattccaagcttgtagcttgagc  
aaattttaaagtgttttaagcctcagtttctgggatggtagtgcttagctcgagctcc  
tagcataatfaactacaaactaaatattagctataattattagttttactttgattatt  
gactctaaataaaccttaagaacttgtgttctccacagatttggatatgtctggacg  
ttatgtaggctggagtagtcagcaattacttgctgaggaaggggaaggcctcctcttta

agaaaagaataggctgggtgcggtggctcacttgtaatcccagcatttgggaggctg  
aggagggtggatcacctgaggtcaggagttgagaccagcctaaggaacatggtgaaacc  
ctgtcttactaaaaatacaaaaattagccaattgtggca

>IGR2262a

cagcaattactgcctgaggaagggaaggcctcctcttaagaaaagaataggctgggt  
gcggtggctcacttgtaatcccagcatttgggaggctgaggagggtggatcacctga  
gttcaggagttgagaccagcctaaggaacatggtgaaacctgtcttactaaaaatac  
aaaaattagccaattgtggcacgcgcctgtagtccggctactcaggaggctgaggtgag  
aggattgcctgagcctgggagggtggaggttcagtgagccgagatcgcgccactgcactc  
cagcctgggcaacagagtaagactccgtctcaaaaaaaaaaaaaagaaagaaagaaaaga  
gtagaaggcccaagcttagtccaattattatagcttcagcatcagagtagagaatgattca  
gagcatgttcagtgctgtgtatgccctcaatccgtgttggacgttctgtgtaa  
gggtgtatggcagatgcacccgacagatgcactggcagcaataacttatgcatactg  
aagaatgacctatggtctaagaagaatgtgtgttcagagctccaagctaaggaatctgg  
gagtgccaaccagatatttcatttctatctatgacgaacttctgaactgtcccacc  
cccagccatcctgtagaatgcaggccctacgaggcgatc

>IGR2263a

cccgacagatgcacttggcagcaataacttatgcatactgaagaatgacctatggtct  
aagaagaatgtgtgttcagagctccaagctaaggaatctgggagtgccaaccagatat  
ttcatttctatctatgacgaacttctgaactgtcccacccccagccatcctgtagaa  
tgcaggccctacgaggcgatcaaaagcccttgttttaggttaaatgaaggttgcctgggt  
gaggtgtcaggggaaaggtgttaagtaaaaatgttatataaactgcatggtgtttttg  
tttgttttgtttttgagacagagttttgtcttgttcccaggctggagtgaatg  
gtgcaatctcggtcactgcaacctccgcctcctgggtcaagtattctgtctcag  
cctcccaagtagctgggattacaggtgccaccaccaggccggctaatttttgtattt  
agtagagtcagggttcccatgttggtcagcctggtctcaactcctgacttcaggtga  
tccacctgcctcagcctccaaagcgctgggattacaggtatgagccaccacgcctggcc  
aattgcatgctttttacaaggagttttgttctcctgccagcccactgccactggactg  
ccctgtattgtaagtcacctcaataaaccttatgtctcag

>IGR2264a

catgttggtcagcctggtctcaaaactcctgacttcaggtgatccacctgcctcagcctcc  
caaagcgctgggattacaggtatgagccaccacgcctggccaattgcatgctttttacaa  
ggagttttgttctcctgccagcccactgccactggactgccctgtattgtaagcccc  
tcaataaaccttatgtctcagtttctggttctaggtctcttctcagcctcttgaacatg  
gtgccatccctactgaagtcfaatgggtctgacatgactaggggaactgaacaaaatct  
gaaatagctgtttttgttccaaaatcactgtaagacattattgcctcagccccaga  
acattgaattatatgacccaagagtgagaaacagagaagtctgtctgtgtcatcagaca  
atatcccaagtggtatgtcatcacccaatgcataattggcatttgggcagagtagagcag  
cgtcagcctagcaagacttggcacaattctgttgattgcacaatagaatgagaaatcac  
atttctgtgttatgtgattctgcattttaactccagtttgttggcctggacagacagg  
taactagccatgaagacaatggaccttgaaacattctgaagactagaaaaagtatgtaat  
aaaatactttgaacaactgtttaaggacttaaatgtccag





tgatttactattggatgtgggcatgaggggaaggaaattaaggatgactcctggatttta  
gcctgagcaactttatagcttttcatgtttgttttgaatggggagatttgatggggtg  
ggggtttgggaaattaagagtttttatttttttgccttttaaaaattgtggtga  
aatacacataacataaaatttaccattttaaccactcttaagggcattaagtacattcac  
attgtgaaccatcaccatcatccatctgtagagaactctttcatcttgcaaaattgaa  
actctgtacctattaaactaactccccactcccccttaccctagccccgaaaaccc  
ttctataatacagaagctctatgaatttgaccactctcataagtggaaacacatagtat  
ttgtcctttgtgactcgttttattgtcacttagcataatgtcttcaagggtcatccat  
gtttagcatatgtcagaatttccttcccttttaagactgaataatatgccattatata  
gtatactacattttgttaccattcatccactgatggac

>IGR2269a

ctatgaatttgaccactctcataagtggaaacacatagattttgtcctttgtgactcgc  
ttttattgtcacttagcataatgtcttcaagggtcatccatgtttagcatatgtcagaa  
ttccttcccttttaagactgaataatatgccattatatagtatactacattttgttta  
cccattcatccactgatggacacttgggttgccttccatctttgcctgttgtgactaatg  
ctgctgtgaacatgtatglacaagtatctatttgagtacttgccttttaattctttggga  
tatacccagaagtggaaattgttgatcatgtggaattctatgttaatttttaagga  
attgccatactgtttccccggtagctgtaccattttacattcccaccaacagtgcacaa  
gagttccagtttccacgtcctcgccaataacttgtattttctgtggtttgtgtgtgt  
tgttgtttgtttgtttgtttttacagaagctatccaatgggtataaagtggat  
ttcattgtggtttatttgcatttccctaattattaattatgttgagcatctttcatgt  
gcttattggcaatttatattttcttggagaaatgtctactcaactctttgcccatt  
ttaaatacaggtttttttgttgtgtgaattgtagg

>IGR2270a

gttttttacagaagctatccaatgggtataaagtggatttcattgtggtttatttg  
catttccctaattattaattatgttgagcatcttttcatgtcctattggcaatttatat  
attttcttggagaaatgtctactcaactctttgcccattttaaaatcaggtttttt  
ttgtgtgtgaattgtaggagttctttacatattgggatatgaaccactatcagat  
acatgatttgcaaatatttttccattctatgccttttactattgattatacctttt  
acgcacagaagtttacattttgatgtagcccaattttctatttttctttgttggc  
tgtgcaagagttttattttaaataaatttgggatgtctattagacatccaagtcaaaa  
tgtcaaatagacggctggatatatgagtctgaaggtcataaaagagatcagaatgagata  
taaattagggaatcattcacatatagatggtatttaaggccatgggtctggacagaatca  
cccaggagagaagtcatataggaacacataggtttccctagggaatacagtcatttaga  
gtaaaattccatcgaaggagatcaggaggtcttggctgagttaaatttgataatataag  
ttattaactatgttaattgtgttctaagctagatgccagggt

>IGR2271a

catatagatggattttaaggccatgggtctggacagaatcaccaggagagaagtcatat  
aggaaacacataggtttccctagggaatacagtcatttagagtaaaattccatcgaagga  
gatcaggaggtcttggctgagttaaatttgataatataagttattaactatgttaattgt  
gttctaagctagatgccagggttaaggcagaaattaggaggtcctgggcaagtatcaattt  
gctctgctattgtatttacaagaataataactaacaatagtagacctcatttcac

ctcacaaatagctttacgcgattgatattctgtcttcactttacaggcaaagaacaaaa  
gagaagtaaagtaatttaccagttgctatagttagcatgtggtagggtccatattagagg  
tctggctgtctgcatgatggttaattttatgagatagcaagtaaacattatttgtgtc  
tgtgtctgtgtctgtgaggatgtgttcggagagggtcacaaagcatttgaatcagtagacg  
gagcaaataagggtccgccctcaccaatgtgggcaggcatcatccaattcactgaggactc  
ctgctcacacagaacaaaaagtcagaggatgtgcctatagttccagcttcttgaaggct  
gcggcaggaagatgctggggccaggagtttgaggccagc

>IGR2272a

atgtgttcggagagggtcacaaagcatttgaatcagtagacggagcaaataagggtccgcc  
tcaccaatgtgggcaggcatcatccaattcactgaggactcctgtcacacagaacaaaa  
agtcagaggatgtgcctatagttccagcttcttgaaggctgcggcaggaagatgctggg  
gcccaggagtttgaggccagccagggaacataagacatttctcttfaaaaaaattt  
ttttggctgggtgcagtggctcatgcctgtaatcccagcactttgggaggccgaggcag  
gcggatcatgaggtcaggagatcgagaccatcctggctaacaatggtgaacccccgtctc  
accaaaaatacaaaaaattagccgggcgttgtgtgggcacctgtagtaccgctactca  
ggaggctgaggcaggagaatggagtgaaccccgaggcggagggtgcaatgagtggagat  
tgcaccactgcactccagcctgggcgacagatcaagactccgtctcaaaaaaaaaaatt  
ttttttaaggcataggaaggggcaattctctcattctctcttctttagctgggaca  
tccatttctcctgccttcaggaaatcagagctccatgttcttgatctcccactctgg  
gacttacaccttaccctttcccctcagctttcagactt

>IGR2273a

ctgggcgacagatcaagactccgtctcaaaaaaaaaaaaaattttttaaggcatagga  
agggcaaattctctcattctctcttctttagctgggacatccatttctcctgccttc  
aggaaatcagagctccatgttcttgatctcccactctgggacttacaccttacccttt  
tcccctcagctttcagacttgactgaattacaccatcaccttctcctggtctccagct  
tgcagatagcatgtcatgggacttcttagcctctgtaatcatatagccagttcatatag  
taaactcctcctattgatctatacctatatctgtaacctattagttgggttctttgg  
aaaactctaatacccccttatccacagtttttttttctgcagtttcagttatctac  
ggccaactgggtaaaccaataggtgagtacagtacaataaaatatttgagagagagat  
gcacatttgcagcttctattacagcatattgtataatcattctattttattagctat  
tgttagctcttattctgcataattataaatttaattttaggtacgtatgtatg  
tatgtataggaaaaaacctagtatatatagttcagtagtactctgagggttcaggaatc  
ccctgggtgttcttgattgtagccccctgccttcaagcct

>IGR2274a

attacagcatattgtataatcattctattttattagctattgttagtctcttattctgc  
ataatttataaattaaattttatcttaggtacgtatgtatgtataggaacccct  
agtatatatagttcagtagtactctgaggttcaggaatccccctggtgttcttgattg  
tagccccctgcctcaagcctgcactctcaattactgatgtacatctcattaccctgaa  
agatgaatctagccttgagccctaccaactggctgcattagatcattttagatctcca  
tgtcaccgcagtcacatttgtgtgtggaatgggtccaggagagatgggtgctattctgc  
caccttcattagcctggcttgactctctctgaacacttgggtcttattaacactgtgc  
caggttctcatatacccaataaagaaaaagaaagtagatggatacaggtacatacta

ggcccaacagaagttatgcttttactccctttcctcttcaatttagatactactatggcc  
cttftgctccgtctatctcagttccctcgttgcttattcattccattcacctctactgca  
aggccctaaatccaaccatttggctactgtactcctaccctgggtcactggaggaaatca  
cacaacctgtgagttgggtgcttgacacatttacattc

>IGR2275a

tttactccctttcctcttcaatttagatactactatggcccttggctccgtctatctc  
agttccctcgttgcttattcattccattcacctctactgcaaggccctaaatccaacct  
ttggctactgtactcctaccctgggtcactggaggaaatcacacaacctgtgagttggt  
gtcttgacacatttaccattccaatcacaattggaccctcagcccactgttactctctc  
aacccatgttccctgcaccatcaacagcccccttcttctgtatcttaagtgcga  
tcttggaftgagagtgaagagtaaaatggttgactattgtgagcttagccttgcag  
actagtaaaaaaggactggggtagtggcaagagtatgaatgggctggagggatcaca  
gggtataaactgaaagggaaaggaaatgatatcaggtgagagctgaagagttggaggaaa  
acaaaggctcctagagtgaatggagctgttgactgatgagaggccagggtgtgtcct  
cagcagcaagagtgtgaagtataggtgaaggtaagtactgcaggctaagggttagcac  
tactatcttctgagcacaagaatcaccagcaccttgggctgggtgtcagagagctcac  
agaatgtggataaccaaccaggcagatgttggttaacagca

>IGR2276a

atggagctgttgactgatgagaggccagggtgtgtcctcagcagcaagagtgtgaag  
tataggtgaaggtaagtagctgcaggctaagggttagcactactatcttctgagcac  
aaaagtcaccagcaccttgggctgggtgtcagagagctcacagaatgtggataaccaacc  
aggcagatgttggaacagcaaccaggagggcacagcacaacctgagcaggcttttat  
gtatgtgaagggtgaaggagttatgatttagaaatggcagtgggaagcaaggagaatgtg  
agagcctgtcagctcttgtctccaggatcatggatagtcaaaatgagtagccttctc  
ttgagagacagagccatgaggctagtggagtgtcagaaagaagccagatctctatcaag  
gaaaggagatggagagaacaaccagggatgtacttgaaaggagagagttgcatgtctaca  
atggaatatgtgttcagaggactcagtcacagagaagacaactgcaggagggtgagctg  
gagggtctgcaggggcaggagcacagtagggcattagaatgggagttttagatgagaag  
gattacatttcagtgctggaggaagatcatctcaaggttcacaaaatcaagctttaaac  
ttgtctgtgtcaacagacggaggcattgggtgatatgtca

>IGR2277a

ggactcagtcacagagaagacaactgcaggagggtgagctggagggtctgcaggggcag  
gagcacagtagggcattagaatgggagttttagatgagaaggattacatttcagtgctg  
gaggaagatcatctcaagggtcacaaaatcaagctttaaaactgtctgtgtcaacagacg  
gaggcattgggtgatgttcaaataccccataatttttataatccttcagcagctctgtt  
aaatataaccttgggtgataagctaagttacctcagcatagcaagcttggcttggctaaa  
tcagggtagagggtgattgctgtcctaaaggaagtgaagagagacaccagctctggattgga  
gaacatgactttgacctgggtttcagctccacagggttaagccccaggggagcactggg  
caagttgctaaggccacaagcaggagtttataaccaggctagactaagcccactgatgca  
agaattttttttttttttgagacagagctcactctgtcacccgggctagagtga  
gtgggtgtgatcttgggtcactgcaacctccgcttccctgggtcaagtgtattctcctgcct  
cagcctctcaagtagctgggattacaggcaccgctaccatgcctggctaaattttgtat

tttttagtagagacagggttcaccgtgtggccaggat

>IGR2278a

tttgagacagagtctcactctgtcacccgggctagagtgcagtgggtgatcttggctca  
ctgcaacctccgcttccctggtcaagtgattctcctgcctcagcctctcaagtagctgg  
gattacaggcacccgctaccatgcctggctaaatttttagtagagacagg  
tttcaccgtgtggccaggatggctctgagctcctgacctcaagtgatccacctgccttg  
gcctcccaaagggtgggattactggcttgagccaccatgccagcctgatgcataatt  
tgcattcttcactgctcttcctatgctctgaagacctggcacttagtcaaacactcagt  
aagttttttttaactgctttatgattataaaagtaatatgaagcattttaaag  
tatggaaatctggaaaaataaaacagaagtcataatctgacctccaaacatacc  
tactgttaataaccttagctacgttcttcttttttcccttttttgagatggagtcttg  
ctgtgtgcccaggctggagtacaatggcatgattcggctcactgcaacctctgcctcc  
caggttcaagcagttctcctgcctcagcctcccaagtagctgggcttacaggcatccacc  
accatgccctggtaatttttgtatttttagtagagatggg

>IGR2279a

tacgttcttcttttttcccttttttgagatggagtcttgcctgtgtgcccaggctgga  
gtacaatggcatgattcggctcactgcaacctctgcctcccagggtcaagcagttctcc  
tgcctcagcctcccaagtagctgggcttacaggcatccaccaccatgccctggtaat  
tgtatttttagtagagatgggggttcgcatgttggccaggctggctcctcaactcctgac  
ctcatgtgatctgcccgcctcagccttccaaagtctaggattacagggtgagccaatg  
cgcctggcctttttttttaagacagtttgcctcttttggccaggctgtagtgcag  
tgggtgatcttggctcactgcaaccagggtcaagtgttttgcctcagcctctga  
gtagctgggactacagacgccaccatgccagctaattttttgtatttttagtagagat  
gggggttccacataattggccagggtgggtcctcaactcctgactttgggtgatccgcca  
cggtggcctcccaaagtgttgggattacaggcatgaaccactgtgccagctgagcctac  
tttctctggctttttctatgcctccccaccaccacccagccccccgccattacata  
cgtatatatgtttttttttaagagatgaagtctt

>IGR2280a

ccagggtggtctccaaactcctgactttgggtgatccgccacgttggcctcccaaagtgt  
tgggattacaggcatgaaccactgtgccagctgagcctactttcttctggctttttct  
catgcctccccaccaccacccagccccccgccattacatacgtatataatgtttttt  
ttttaaagagatgaagtcttgcctctgttggccaggctggtaggctgatctcaactcct  
ggcttcagggtgatcctcctgtgttggcctcccaaagtgtgtgttacaggcataagcca  
tcacacctggctattttcacgctttaaactcactttattcattcatttattcactca  
ttcttgattaacactcatatactgggtttattttattttatatttttagctacagg  
gtctcactctgtcccagggtggagtgcagtggcatgatcatgactctgcaaccccgaa  
ctcctgggctcaagggtaccccaactcagcctcccaagaagtaggattacaggcaca  
tgctaccacacctgctaattttttaaataatttttcttcttttttttttt  
ttttttgtagaaccagtgtgtgttaggccattcttgactactataaagaaatacctga  
gactgggtaatttattaagaaaagggttaattgactca

>IGR2281a

ctcccaactcagcctcccaagaagttaggattacaggcacatgctaccacacccctgctaa  
ttttttaaatattttttcttctttttttttttttttttttgtagaaccagt  
tgtgttaggccattcttgctactataaagaaataacctgagactgggtaattattaag  
aaaagagggttaattgactcacgatttcacaggctgtataggaagtgtggcactaggcat  
ctgctcagcttctagggaggcctcaggagctttactcacagtggaggtgaaggggga  
gcaggtgtgtcacatggtaaagacaggagcaaggtggggggagggtgccacacccctaaac  
aaccagatttctcaagaactcacttattatggtggggacagctccaagccatgagggatc  
tgccccatgacaaaacacctcccagcaggccccacctccaacattagagattacatt  
ccacatgcgatttgacagggataaatatccagactatgtcattttgcccctggccctcc  
taaattctatgtccttctcaagttgcaaaatacaatcatgccttccaagagttcccaa  
agtcttaactcattccaatgttaactcaaagcccaaaattcaagtctcatctgagaca  
aggcaagtctctccacctatgagcctataaaatcaaaaa

>IGR2282a

ggataaatatccagactatgtcattttgcccctggccctcctaattctatgtccttctc  
aagttgcaaaatacaatcatgccttccaagagttcccaaagtttaactcattccaat  
gttaactccaaagcccaaaattcaaggtctcatctgagacaaggcaagtctctccacct  
atgagcctataaaatcaaaaacaagctatatacttccaagttacaatgggtgtataggca  
ttgggtaaacatgccattccaaaagagaaattggccaaaagaaaggggtacaagctcc  
atgcaaatcaaaaccagcagggaattattaaattgtaaagctccaaagtaattctct  
ttgactccgtgtcccatatccagggtcactggtgcaagaagtgggctcgcaaggccttg  
ggaagcttgcacctgtagtttgcatagtacagcctccacagctgctcttatgggctaga  
gttgagtgcctgtggcttttccaggcacagggtgcaagctgccagtggatctaccattct  
caggctctggagggtggtgaccccttctcacagctccaccaggcagttccccagtgagga  
ctgtgtggggcctcaaccccacatttcccctccaaactgccttagtaggggttctctgt  
gagggttccacccctacagcaggcttctgcctgggtaccc

>IGR2283a

tccaggcacagggtgcaagctgccagtggatctaccattctcaggtctggagggtggtga  
ccccttctcacagctccaccaggcagttccccagtgagactgtgtggggccttcaacc  
ccacatttcccctccaaactgccttagtaggggttctctgtgagggttccacccctacag  
caggcttctgcctgggtaccctggcttctgtacatcctctgaaatctaggtagaggct  
gccaaagcctccttactcttacagctgcatgcctgcatgcttaacaccacatggaagct  
gccaaagcatatggcttttgcttttgagcagcagcctgagctgtacctgaggccctt  
gagccacagctggagctggaacagcctggatgtagggagcactgtcctaaggaggctgtg  
cagagccatggggctcctaggcctagcccatgaaatgattcttctccttaggtctctgggc  
ctgtgcctgtgatggcaagggtgcccctgagatctctgaaatgccttcaaggcctttt  
cccattgtcttagctattagctacctggctctcttttagttattcaaatctcttagcaag  
tggttgctccacagcctgcttgaattcctctactgaaaatgcttctgcttctctatcac  
atggccagggtgcaaatcttcaaaagtttacactctgt

>IGR2284a

ggctgcccctgagatctctgaaatgccttcaaggccttttccattgtcttagctatta  
gtacctggctctcttttagttattcaaatctcttagcaagtgggtgctccacagcctgc  
ttgaattcctctactgaaaatgcttctgcttctctatcacatggccaggctgcaaat

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

tctaaagttttacactctgcttcccccttaaatataacttctaactttaagtcattttt  
ttgctctcacatctgagttaagctgtagatgcagccatgtaacttctgaacactttgc  
tgcttagaaatttctctgccagataccctagttgtcactctgaagttcaaactccaca  
gatccttacagcatgaacaaagtgcagccaagttctttgctaggccataatgaggggtggc  
ctttgctccatttctaggttctcatttccatctgagacctatcagccacgccttact  
ttccatatcaccatcagcatttctggttacaaccatttgaccagccaagtactattctaac  
ttctgagaatacagaagtgtcctcatggaacttacagtctagtggaggaagaaggacaa  
taaatgcaacaaagaagtaaattagtcaggatgtcagagagtataagtcctatggagaa  
aatgaagcaggagaaaaatgaagcagggatgcataaagt

>IGR2285a

ttctggttacaaccatttgaccagccaagtactattctaacttctgagaatacagaagtg  
ctctcatggaacttacagtctagtggaggaagaaggacaataaatgcaacaaagaagta  
aattagtcaggatgtcagagagtataagtcctatggagaaaaatgaagcaggagaaaaa  
tgaagcagggatgcataaagttagttcagagagagaacaggatacaattttaaatagtg  
ggcagataagggtttattaaggaggtggcatttggccaagacactaaggaagtaagag  
aacaagctatgtagatagctgggaagagcatttctaggaagaggggaacaagtatctaata  
gagaagcatgtctagtatgttcaagaatagcaaagccttggtagccttaatgaagaaag  
caatggagagagtaataagagatgatgtcagcgagctaaaggaggggcatgaagattagag  
tagggccctataaaactggatgaccactgtcaaatgaaattaaggctgttgaggcagaaat  
gatttgataaaagtatttgaagccaaatgtgaggatgaaccaggaaaacacaccaac  
aaagttgagagtggtctgaggtctgttacaagttgaaagttagaagacaggagggggac  
tcttcatacaggagttgtccttttctactggagggtacaa

>IGR2286a

tgaccactgtcaaatgaaattaaggctgttgaggcagaaatgatttgataaaagtttatt  
ggaagccaaatgtgaggatgaaccaggaaaacacaccaacaaagttgagagtggtctgg  
agtctgttacaagttgaaagttagaagacaggagggggactcttcatacaggagttgtc  
cttttctactggaggggtacaatacaaaggttacaataattggctacagattgcaacatgc  
agactaacatgtctacatgcaagacaatcagtaaaatgttatgactcagaataaatcag  
tgtcctttcagtgtcagtaggtggtgcattgatcagatcaacaatttgaggaactt  
ctaagattccttactcaggacaaggtatcgccatgaatcacaagaccttcccaagatggg  
ttaatttggaagctgtttacttttaaagtaaactgtcaaatgtgacctgtagggtattgc  
catatataatttgcacccaaattaggagacttctagaatgaaagttggaggtgagggtt  
attaatcattaacactagggctggttgccgtggctcacgcttgaatcccagttactttgg  
gaggctgaggcaggcagatcacgaggtcaggggattgagaccatcctggccaacatggtg  
aaaccccggtctctactaaaaatacaaaaaaaaaaaaaa

>IGR2287a

aaattaggagacttctagaatgaaagttggaggtgagggttattaatcattaacactagg  
gctggttgccgtggctcacgcttgaatcccagtttgggaggtgaggcaggcagat  
cacgaggtcaggggattgagaccatcctggccaacatggtgaaacccgttcttactaa  
aaaatacaaaaaaaaaaaaaatttagctgggcatggtggcacatgcctgtaatcccagct  
actcagaaggctgaggcaggagaattgctgaaccaggagtcggaggttcagtgagct  
gagatcatgccactgcactccagcctggcaacagagcgagactccgtctcaaaaaaaaaa

aaaaaaaaagttaactagttcagtgagagaagccaggactgtgctggacaaactctg  
acgtgtaatcattctacttataagaccattgtaaggacttgggctttcaaaaaatctgact  
gagatgggaagcgattggaaggtttgagcagaaaagtaacatgatgtgattgagatac  
cctgactactatgctgagagtagattgaaggggcgtaggagcagccttaatgaagaagga  
ttggctgggggctaacagaatgcaggggaagaaactggattctgcatatgttgaaattatg  
gcaaaaagattttattgacagattggatgtggagtacaaga

>IGR2288a

aggttttgagcagaaaagtaacatgatgtgattgagatatccctgactactatgctgaga  
gtagattgaaggggcgtaggagcagccttaatgaagaaggattggctgggggctaacaga  
atgcaggggaagaaactggattctgcatatgttgaaattatggcaaaaagattttattgaca  
gattggatgtggagtacaagaggaagagcagccaggaaaataaagttccatttactgag  
ttggggaggacttcaggaagagcagatttgggatgaaattaggagcacatgttaaatttg  
acatgttatgttgagacacctattatataccaagtgaggatatcaagtgggcagttat  
tatgtgagcctggagttcactctctctatgtgttggtggtcatcagtgagagatgatat  
ttaatcatgagactggatttttaaaaaggaagaggactgaagactaagtctgggcac  
tccaattttgggcagtagcggagatgaagaaaaccagcacactagatggtaaaggagca  
gccacaaggtgaagaggaaaaccaagcaagtgtcattttgttgatttttgatacaga  
gtctcactctgtcactcaggtggagtgaatgacacaatctcggtcactataacctct  
gccttctgggtccaagtgttttcttgcctcagcttccca

>IGR2289a

ggagatgaagaaaaaccagcacactagatggtaaaggagcagccaacaaggtaagaggaa  
aaccaagcaagtgtcatttttgtgattttttgatacagagtctcactctgtcactcag  
gctggagtgaatgacacaatctcggtcactataacctctgccttctgggtccaagtgt  
tttcttgcctcagcttcccaagtagctgggactgcaggtgtgtgccaccacgcctggcg  
caagtgtcatgtagaagcagttcaaggatgaaagagaaatgagttgtcaaatgccttg  
agaggtcaggtgaagatgatgactgtgaattgactattgaattcagaaacatgcaggtcac  
tgcggacctgatagaggtgctctggtgaaaggtgagggctaagccttaattgtagtggg  
gccaaagtgaatttgaagaacaaagttgaaagtagcaagtagatatagcaatcttccaa  
ggagtttactgctaagggacagggagaaatggggcaggagctgacagcagaaactgggt  
caagagagagcttttacagcctcttgcatactgaatgggaaagatccagtagagaggga  
aaagatttatgatgggggagtcaggagaattgctagagcaacatgtgctcctaatttcat  
cccaaactctgcttctgaagtcttcccccaactcagtaa

>IGR2290a

acagggagaaatggggcaggagctgacagcagaaactgggtcaagagagagcttttacag  
cctctttgcatactgaatgggaaagatccagtagagagggaagatttatgatggggga  
gtcaggagaattgctagagcaacatgtgctcctaatttcacccaaatctgcttctctg  
aagtctccccaaactcagtaaatggaaactttatttctggctgcttctctctgtac  
tccacatccaatctgtcaataaagcttttgcataatttcacatatgtagaatccagt  
ttcttgctgtattctgttagccccagccaatcttcttcattaaggctgtcctacgc  
ccctcaatctactctcagcatagtagtcagggtatctcaattacatcatgttactttt  
ctgctgttggaaggagtaggggggtgggggagggtgaagaagtatataaggctggggcc  
gggcacagtggctcacacctataatccagcacttgggaggctgaggcaggccaatcac

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.



ttgagcccaggagttcagtagcctagccaacatggcaaacctgtcttactaaaa  
atacaaaaattagctgggtatggtggtgcctgtaacctagctacttcggaggctg  
aggcatgagaatcgtttgaacctgggaggcagaggttgca

>IGR2291a

tataatcccagcactttgggaggctgaggcaggccaatcacttgagcccaggagttcagt  
actagcctagccaacatggcaaacctgtcttactaaaaatacaaaaattagctgggt  
atggtggtgcctgtaacctagctacttcggaggctgaggcatgagaatcgtttga  
acctgggaggcagaggttcagtagccactgcactccagcggggaggagagaccattca  
ggagaaacgggagaaaagacagagggtgtgggtacagatggagttaggctggtggattat  
gctgctttagaggttctctccattgcttctattttctaggtgaaataggaagccaaggc  
acagctgagggtgatcatgggggaggagggtgatggagtctgaagagaaagaaggcttc  
caggatagagaatgaaccagggaattaggatcctctgaagtcactgatggtcagtta  
aagtgaaccagtcagatggaatatatttccatctacatttgctatgcaggtgctagc  
aagaagtagggaggagggttagatttaaccagcttatagtttccacaaaagcaaggcag  
ataagaaaggggcaaggaagatgattatgatgattaagcatggaatttaagctggccaag  
aagggtgtgaggacatgagtaagatgagagatagcaaaa

>IGR2292a

gaatatatttccatctacatttgctatgcaggtgctagcaagaagtagggagggtt  
agatttaaccagctttatagtttccacaaaagcaaggcagataagaaaggggcaaggaa  
gatgattatgatgattaagcatggaatttaagctggccaagaaggggtgtgaggacatga  
gtaagatgagagatagcaaaaacgtggacatctttgccaggatggagccaaacacagta  
tgcatgtctcatgtaatccccacccaaatggaattgtatcatcctctttacagatga  
agaagctgagttttagggaagactgtaacttgctcaaagtcacacagctgatagagaagt  
gacacaccagcatcaggtcctggaacacttgctccaaaggctatgacttagccctat  
ttgctttaactggagtattagtgggcattacaaaattgatgcatagtacaaaggatgg  
taatttgtccagatgtttttgtaatacttttccaactgagtttaattttaagatttt  
ctgtgtacagaattctttaaagtttatagtaaaatctatttacttcaatttcctatt  
catcttaaaattaaatgtcacctatatttcttctagcttttgatttattactcttggc  
tctattttattacatttattacatttggtcttttagttg

>IGR2293a

tttgtaatacttttccaactgagtttaatttaagattttctgtgtacagaattcttt  
aaaagtttatagtaaaatctatttacttcaatttcctattcatcttaaaattaaatgtc  
acctatatttcttctagcttttgatttattactcttggtctattttatttacattta  
ttacatttggtcttttagttgatcaggaatttaatttggtatgtggtttatggtgggatac  
tatttattccccagtttttccattttaccagttcttcagcttgtcgattgtcccagca  
ccagcttcaacaatgtatcatttcttgataattataattcatctttatcatatgtta  
caattttcaacacttgggtctgtttctgtgatacctcttctatttcgttgattgattta  
tcttttgtgtgtgtctgtgtgtgtgtgtgtgtgtgtgtgtgttttcaggaaaccag  
agtagttagtcattgtgtgttttatatgtaagagaacatttcccttatcaatgat  
cttttcaaaaatttcttaacatattacatatttctttttcagatgctctttacaaat  
atttttaacttcttaaaatatctcattgaggattccgttccaagatggccaaataggaa  
cagctctggtctgcagctcccagtgatgcacgcagaag

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

>IGR2294a

gtttttatatatgtaagagaacatttccccttatcaatgatcttttcaaaaatttctta  
aacatattacatatttctttttcagatgctctttacaaatatttttaacttcttaaaa  
tatctcattgaggattccgttccaagatggccaaataggaacagctctggtctgcagctc  
ccagtgtgatcgacgcagaagacggatgatttctgcatttccaactgaggtacctgggtc  
atcttactaggactgggtggacagtggtgcagcccacggagggtgagccgaagcagggc  
agggcatcgcctcacctgggaagcgcaaggagtgcaggggatttcttttctagccaagg  
gaagccgtgacagatggtacctggaaaaacgggacactcctgccaaatactgcgctttt  
ccaaagtcttagcaaatggcacaccaggagattatctgtgcctggctcgacagatcc  
tatgtccatggagccttgtcactgctagtgaacagctctgagattgacctgcaaggcag  
caacctggcatggggaggggcatccgccattgctgaggcttgagtaggtaaataaagtgg  
ctgtggaagctcgaactgggtggagcccaccacagctcagcaaggctgactgcctctgta  
gtctccacctctggggcagggcatagctgaacaaaaagca

>IGR2295a

tcactgctagtgaacagctctgagattgacctgcaaggcagcaacctggcatggggaggg  
gcatccgccattgctgaggcttgagtaggtaataaagtggctgtggaagctcgaactgg  
gtggagcccaccacagctcagcaaggctgactgcctctgtagtctccacctctggggcag  
ggcatagctgaacaaaaagcagcagaaacttctgcagacttaaacatccctgtctgacag  
ctctgaagagagcagtggttctcccaggatggtgttttagcttggagaacagacagactg  
cctcctcaagtgggtccctgacccccatgtagcctaactgggagacacctcccagtagcc  
gactgacacctatacaggcaggtgccccctctgggatgaagcttccagaggaaggatcac  
tcagcaataattgtctgttctgcaatatttctgttctgcagcctctgatggtgataccca  
ggcaaacaggtctggagttagacctccagcaactccaacagacctgcagctgagggacct  
cactggtagaaggaaaaactaacaacagaaagaaatagcatcaacatcaacaaaaaggac  
atccacacaaaaaccccatctgtaagttaccaacatcaaagaccaaaggtagataaaacc  
acaaagatggggagaaaccagagcagaaaaagctgaaaatt

>IGR2296a

gacctccagcaaaactccaacagacctgcagctgagggacctcactggtagaaggaaaact  
aacaacagaaaagaatagcatcaacatcaacaaaaaggacatccacacaaaaccccat  
ctgtaagttaccaacatcaaaagaccaaaggtagataaaaccacaaagatggggagaaacc  
agagcagaaaagctgaaaattctaaaaaccagagcaccttctctcctcaaaggatcaca  
actccttgccagcaatggaacaaagctgggtggagaatgactttgacgagctgacagaag  
tggaactcagaaggctcagtaataataaacttctcccagctaaaggaggatgttctaacc  
atcgcaagggaagctaaaaacctgaaaatagattagacgaatggctaactagaataaaca  
gtgtagagaagaccttaaatgacctgatggagctgaaaacctggcacgagaactttgtg  
acacatgcacaagcttcaatagccgattcgaatcaagaaaggatatcagtattgaagatc  
aaattaatgaataactcaagaagattagagaaaaagagtaaaagggaacgaacaaagc  
ctccaagaaatatgggactatgtgaaagaccaaactctacgtttgattggtgtacctgaaa  
atgacagggagaatggaaccaagttggaacacactcctca

>IGR2297a

tagccgattcgaatcaagaaaggatatcagtgattgaagatcaaatatgaataactca  
agaagattagagaaaaagagtaaaagggaacgaacaaagcctccaagaaatatgggact

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

atgtgaaagaccaaattctacgtttgattggtgtacctgaaaatgacagggagaatggaac  
caagttggaaaacactcctcaggatattatcaaggagaacttccccaacttagcaaagca  
ggccaacattcaaattcaggatatacagagaatgccacaaagatactcctcaagaagagc  
aaaccaagacacataattggcagattcaccaaggttgaatgaaggaaaaaatgttaag  
cgcagccagagagaaaaggtcgggttacgcacaaaggaagcccatcagactaacagcgga  
tctctcggcagaaacctacaagcccgaagagagtgggggccaattatcaacattcttaa  
agaaaagaattttcaaccagaatttcataatccagccaaactaagcttcataagtgaaga  
ataaaatcctttccagacaagcaaatgctgagagattttgtaccaccaggcctgcctta  
aaagagctctgaaggaagcactaaacatggaaaggaaaaaccggtaccagccactgcaa  
aaatatgccaaattgtaaagaccatcgatgctatgaagaa

>IGR2298a

agaatttcataatccagccaaactaagcttcataagtgaagaataaaatcctttccagaca  
agcaaatgctgagagattttgtaccaccaggcctgccttaaaagagctcctgaagggaag  
cactaaacatggaaaggaaaaaccggtaccagccactgcaaaaatatgccaaattgtaaa  
gaccatcgatgctatgaagaactgcatgaactaacaagcaaaaataaccagctaacatca  
taatgacaggatcaaattcacacataacaatattaaccttaaatgtaaatgggctaattg  
ccccaattaaaagacacagactggcaattggataaagagtcaagaccatccgtgtcct  
gtattcaggagaccatctcacgtgcagagacacacataggctcaaataaagggatgga  
ggaagatctaccaagcaaatggaaagcagaaaaagcaggggtgcaatcctagtctctg  
attaaacagactttaaccaacaagatcaaacgggacaaagaaggccattacataatgg  
taaagggtcaattcaacaagaagagctaactatcctaaatatatgcaccaatacag  
gaacaccagattcataaaacaagtcttagagacctacaaagaaacttagactcccaca  
caataataatgggagactttaacacccactgtcaatatt

>IGR2299a

aacaaagatcaaacgggacaaagaaggccattacataatggtaaagggatcaattcaaca  
agaagagctaactatcctaaatatatgcaccaatacaggaacaccagattcataaa  
acaagtccttagagacctacaaagaaacttagactccacacaataataatgggagactt  
taacacccactgtcaatattagacagatcaatgagacagaagggttaacaaggatatcca  
ggacttgaactcagatctgcaccaagcagacttaatagacatctacagaccttccaccc  
caaatgaacagagtatacttctcagcaccacatcacactattccaaaattgacca  
catagttggaagttaaagcactccttagcacatgtaaaggacagaaatcacacaaactg  
tgtctcagaccacagtgcaatcaattagaactcaggattaagaaactcactcaaaactg  
cacaactgcatggaaactgaacaatctgctcctgaatgactactgggtaataacgaaat  
gaaggcagaaataaagacgttctttgaaaacaatgagagcaaagacacaacgtgccagaa  
tctctggaacacacttaaagcacggtataggggaaatttatagcactaaataccacaa  
gagaaagcaggaagatcaaatcaacaccctaactcat

>IGR2300a

aacaatctgctcctgaatgactactgggtaataacgaaatgaaggcagaaataaagacg  
ttctttgaaaacaatgagagcaaagacacaacgtgccagaatctctggaacacacttaa  
gcacggtatatagggaatttatagcactaaataccacaagagaaagcaggaaagatca  
aaatcaacaccctaactcataattaaaagaactagagaagcaagagcaaacaaattcaa  
aagctagcagaaggcaagaaataactaagatcagagcagaactgaaagagatagagacac

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted March 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

aaaaacttcaaaaaaatcaacgaatccaggagctcgtttttgaaaagatcaacaaaatt  
 gatagactgttagcaagactaataaagaagaaaaagagagaagaatcaaatc gatggtata  
 aaaagtataaaaggggatgtcaccaccaatcccacagaaatataaaactaccatcagagaa  
 tactataaacacctctacacaaataaactagaaaatctagaagaaatggataaattcctg  
 gacacatacagcctcccaagactaaaccaggaaagaagtgaatctctgattagaccaata  
 acaggctctgaaattgaggcagtagttaatagcccaccaacaaaaacagtccaggacca  
 gacagattcacagccaaattctaccagaggtacagaggag

&gt;IGR2301a

caataaactagaaaatctagaagaaatggataaattctggacacatacagcctcccaa  
gactaaaccaggaagaagtgaatctctgattagaccaataacaggctctgaaattgagg  
cagtagttaatagcccaccaacaaaaacagtcaggaccagacagattcacagccaaat  
tctaccagagggtacagaggagctggtagcattcttctgaaactattcctagcaatagaa  
aagagggaatctcctctaattcattttatgaggccagcatcatcctgataccaaagcctg  
gcagagacacacacaaaaaaaagagaggccgggcgcggtggctcacgctgtaatccagc  
actttgggaggccgaggcgggtggatcatgaggtcaggagatcgagaccatcctggctaa  
caaggtgaaaccccgctcttactaaaaatacaaaaaaattagccgggcgcggtggcgggc  
gccgtagtcccagctactcgggaggctgaggcaggagaatggcgtgaacccgggaagca  
gagcttgcaagtgcgcgagattgcgccactgcagtcgcagtcgcggctgggcgacagag  
cgagactccgtctcaaaaaaaaaaaaaaaaaagagaattttataccaatatccctgatgaa  
catcgatgcaaaaatctcaataaaaatactggcaaacga

>IGR2302a

cgggaggctgaggcaggagaatggcgtgaaccgggaagcagagcttgagtgagccgag  
attgcgccactgcagtcgccagtcgggcctgggcgcagagcgcagactccgctcaaaaa  
aaaaaaaaaaaaagagaattttataccaatatccctgatgaacatcgatgcaaaaatcctc  
aataaaatactggcaaacccgaatccagtagcacatcaaaaagcttctccaccacgatcaa  
gtgggcttcacctcctgggatgcaaggctgtttcaacatatgcaaatcaataaacataatc  
catcacagaaacagaaccaatgacaaaaaccgcttgattatctcaatagatgcagaaaag  
gccgtcgacaaaattcaaaagcccttcattgctaaaaactctcaataaactaggtattgat  
agaacgtttctcaaaataataagagcttatatatgacaaaccacagccaatatcatgtgg  
aatgggctaaagctgttgacctgatagatatgggtcaagaggacacagctgaatactgt  
gcttaggaaaagaacagtttcaaaggcttccagattgtcagatttgatgatatcctcct  
tggtgcacacctctcttggtatggggcacataaaccacctctaccaatctaactggtt  
gtgcagttttctgattttgtatctaccggcaaaatataat

>IGR2303a

cctgatatagatgggttcaagaggacacagctgaatactgtgcttaggaaaagaacagtt  
tcaaaggctttccagattgtcagattgatgatactccttgggtgcacacctctcttgg  
ctatggggcacataaaccacctctaccaatctaactggtttgtgcagttttctgatttt  
gtatctaccggcaaaatatacttaagccatttttaggaaacaggaggtttagtcacgtg  
ctcaacaaaagcacaacaaatggggagcatttaatggtgtaagggtgtgaggtgtagct  
gctgaaactgtagctaggagctgccttgccttcttgcaggcagattggccagatgag  
ccaggctaaaatacaattaatatctaccattgtggttaatatgaaatatggatacctgg  
tctttgtctcagttcttgtcatagagttcccaaacctttagaacttctcagtggtagg

aatatctcattagtataatgagccctttgattcgataactcctgagtttatgctaag  
aggttacttaatgtggggccctagatattcttaggatggggctagtccccgaaagacca  
ggtcatttgaggattagagggttgaacttttagctctaccactgatctctgggtgggg  
aagggtgctggagatcaagctgcctaaaaactcttgaacaa

>IGR2304a

tgagccctttgattcgataactcctgagtttatgctaagaggttacttaatgtggggc  
cctagatattcttaggatggggctagtccccgaaagaccaggtcatttgaggattagag  
ggttggaacttttagctctaccactgatctctgggtggggaagggtgctggagatcaagc  
tgctaaaaactcttgaacaacaagattgaggagctccagtaaatgcgtccacaagct  
gggagggcactgcaccccagtttactgggacagaagctcttgcacttggaaatcttcca  
gacctagccctcatgctgcttcactctggctgttcactctgtatcctttataataaattgg  
caaagttaaagggttagctgaatttggtagcctttctagaaaattaattgaacctaaga  
aggggtctgtggaaacctgggtttagtgtagtgtaggcagaggtgcgtgtggcttgatg  
ttcgaatggcatctgaagaggggacagagcacacaacctgtgggatctgacactatctccc  
cgcataggggtcagagcttaattctattagagaacacccattggatctgtggagaa  
ttacttgggtgatgagaagccccaccacatctggtcacagaagtatttggggtgagt  
gtgacagtacagggtaaaaagtgggttgttttctccta

>IGR2305a

gggacagagcacacaacctgtgggatctgacactatctccccgcagatagggtcagagct  
taattctattagagaacacccattggatctgctggagaattacttgggtgatgagaag  
ccccccaccacatctggtcacagaagtatttggggtgagtgtgacagtacagggtaaaa  
agtgggttgttttctcctaacagtgtactccctctcaaaggagtgtggaagggttt  
ctggataggaatactgcataataatcatttgggtcacttcagaaactactataatttgac  
tgtgctgggtcacttcacatgtacaacacacacacacacacacattgtgtcacct  
aatatttgcgttaatacaatgatgtattttatttggataglatttgtatgattggaaa  
tgagtgttaactttatagtattttaccagtccttgactaacatgttttcaagacatct  
taccaatccatttcattgaattaatgagtaaggagactctctagaaatgggttgggttga  
aagcaaggacattatctggaagaatcatccagagttactgtatgacgagcatttcttga  
tagcaagggtcatttgggtgcaatgttacgtcagtcatttcagtgggaacaacgaa  
tttctccacagggtcttattttctgttttccacttcacc

>IGR2306a

attaatgagtaaggagactctctagaaatgggttgggttgaagcaaggacattatctgg  
aagaatcatccagagtttactgtatgacgagcatttcttgatagcaagggtcatttgggt  
gtcaatcgttacagtcagtcatttcagtgggaacaacgaatttctccacagggtcttat  
tttctgttttccacttcacaaatggggtagatattttcagaatgcagttattagaa  
ccttgggatttctctgtctccattgagtccttgtttttccagatctgaacctga  
aaataaaatagatgctaaggaaaattaaatattcaagacttctcctcaaaatgctcca  
tccaaattgacattgaaaaatatttccaatcaatgaacaagtaactatttgaactcta  
atgagaacctcatgggtgtagatctaattttatgcttttaacatctgaggctacttc  
ttaattaagcatagaagccagaatttaaactctttcacagtttcccaagcaaaggatag  
agaggggagcatgaaattcttggcaattaaagtgatactgaagtagttctatcattaga  
agaaaacaacttatcaacaatgggcacttttgcataaatgttctgtcagggtacagaa

ttaattcatatgcagagttacctttatcaaggccaggcac

>IGR2307a

agaatttaaactctttcacagttttccaagcaaaggatagagagggaggcatgaaattc  
ttggcaattaaagttgatactgaagtagttctatcattagaagaaaacaacttatcaaca  
atgggcactttttgctataaatgttctgtcagggatcagaattaatcatatgcagagtt  
acctttatcaaggccaggcactgggaacactttatctttataacctcaaaatagccgta  
tgaaatatcccatatagcagatgggaatactgaagcttagtgaatattaagtgatatgcc  
caaatttttgtagtagattgggatttaaagccaggcagtggtactcgaactctaaact  
tctcctaaataccactaatctttaaatgttgtgtggtgtcataaaaagatactggtc  
tttgccttggtcctaacatagatcctaaatctcttataattctggagtgataggg  
agtataaaaagcttctttgttctaataaggcaacccttggtggggccttagatagctt  
caggggtgggggctgggtaccagaagactaagcctggattagaagcctggaacctctgggg  
agaggagagaggctggggatagacttaataatccatcatccaacatgactaaacctcca  
tgaaaacctctaatgatgggggttggagaacttccgagt

>IGR2308a

gttctaataaggcaacccttggtggggccttagatagcttcaggggtgggggctggtcac  
cagaagactaagcctggattagaagcctggaacctctggggagaggagagaggctgggga  
tagacttaataatccatcatccaacatgactaaacctccatgaaaacctctaatgatg  
gggtttggagaacttccgagttggtgaccacatccacatgccaggagggcagtgccactt  
aactccgtagggacagaacctctgcactcaggaccttccagacctctctgtatgtacct  
cttcatctggctgttcatattgtatcctttgtaagaaaccgctagtggccagtggtctgag  
tgctgtgagtcattctagcaataatcaaaccgaaggaggggattgttggaaccccaga  
cttggtagcaaatgcagagagaaatgtgggtaacctggggacctgacattgtgagtggc  
aagtgaagcaaggcagttattgtgggactgagtccttacacctgtggagtctgatgctaaa  
tttaggtattgtcaaaattgaactgcattataggacactcaataggtgtcagaattggtt  
tgcgtcaagaagaaaaaccttgcgcaatctcataagccaaaaaagatgttgaattgtt  
ttattttgcatttcttattaatgtggacaaataacttt

>IGR2309a

tgtgggactgagtcctttacacctgtggagtctgatgctaaattaggtattgtcaaaatt  
gaactgcattataggacactcaataggtgtcagaattggttgcgtcaagaagaaaaacc  
cttgcgcaatctcataagccaaaaaagatgttgaattgtttattttgcatttctta  
ttaatgtggacaaataactttttcatgtatatattggacactgaagtgacttcttctgt  
aaactgtctgttctgtcctttgtctggttttctactgaattgtttgtcttttctact  
ggttactatgagctttttgtatattaagtatattagccttatgtttaggttttgtgtagc  
aaatattttctcctggccttattgacttttgtctttgtgggtggtttcttttgccttgcc  
aataatttaaaaaatgtacaatcagatatataatctgttctttatggttctttgattt  
tatgttatgtcagtaagatcttctctaaggtataaaaatgtttgttctcctcgtat  
atttatgattttacatttttaggcctaaatttttaactgtctggattttatcttgatgt  
gttttttttggagacggagtctcgtctgtcacgcagactggagtgtagtgccgcgat  
ttcggctcactgcaacatccaccacctgggtcaagcgat

>IGR2310a

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

tcttctctaaggtataaaaaatgttgttctcctcctggtatatttatgattttacattt  
taggcctaaatttttaactgtctggattttatcttgatgtgtttttttggagacgg  
agtctcgctctgtcacgcagactggagtgtagtggcgcgatttcggctcactgcaacatc  
caccacctgggtcaagcgatttctcctgcctcagcctcccgcgagctgggattacagggg  
tgcgccaccatgcctggctaattttgtatttttagtagagatggggtttcacatgttg  
gacagactgttctgaactcctgacctcaagcaatctgcctgcctcaatctccctaagt  
ctgggattacaggtgtgagccaccatgccagccaatgcatttttaagagacaacttt  
ttaatttattcaaatgtctagctgaatgttctaataccttttactgaataactattccc  
ccttgactttgctactttttattacatactgaattttataattttcttgggtttatcct  
gaactctatcctattccattgggttctattcctataccattatcacattgttttaattac  
tattgtcaacaatatgctttattactattattatttttgagacagagtctagctct  
gttgccagctctggagtgcggtggcatgatgttggtcac

>IGR2311a

tattacatactgaattttatattttcttgggtttatcctgaactctatcctattccat  
tggtttctattcctataccattatcacattgtttaattactattgtcaacaatatgct  
ttattactattattatttttgagacagagtctagctctgttgccagctcggagtgc  
gggtggcatgatgttggctcactgcaacctccacctcccgggtcaagcaattctcctacc  
tcagcctcctgagttagctgggactacaggtgtgtgccaccatgccagctaattttgta  
tttttagtagagacagggttccacatgttgccaggatggtctcgaictcttgacctca  
tgatccgcctgcctcagcctccaaaagtgttgggattacagcatgtgccaccgcgcctg  
gcctattattttatttttttgagacggagtttgcctctgttgccaggctggagt  
gcagtgggtgatctcagctcactgcaacctctgcctcctgggtcaagcagttctcctgc  
ctcagcctcctgagttagctgggattacatgtgactgccaccacaccagctaatttttg  
tatttttagtaaagatgaggttacta

>IGR1000a

ggctctgactaaagaatatgacagatcagatattcctctccacctgtccccctccccat  
cccttttagaggggctggggaaattttagtttttaataaaggctttatttctccagttg  
tgcaaaggaatttaactgggactttacaactgaataaagtatttctcagagtcgatacta  
atcttagcaagaggatattgcctaaccacacctaagcagcagagtcattacagaaata  
ttatgttggccttgatttctacccaccatgagttatgctactaccaggtagcctgttt  
tgtttttcatttttagagacagggctcactctgtcaccaggttgagtgagtgacac  
aatcatagcttactatgacctcaactcttaggctcaaatgatccacctcagcctcccaa  
gtagctgggaccacaggtgtctgccactacacttggctaatttttaatttttagtagag  
ataggagcttgctaagttgccaggttggttggaaactcctggcttcaagcagtcctccc  
gccttgggctcccaaagtgtctgaggttacaggcgtgagccactgtgccagcatgtgcc  
tgttttaagtgtatctcctgctgtagtccgttacatgtgcacatctcttctgtgttact  
gtgtacctgctctatgctgagaagaatgtcttttcaaac

>IGR1001a

cccaggttggttggaaactcctggcttcaagcagtcctcccgccttgggctcccaaagt  
ctgaggttacaggcgtgagccactgtgccagcatgtccctgttttaagtgtatctcct  
gctgtagtccgttacatgtgcacatctcttctgtgttactgtgtacctgctctatgctg  
agaagaatgtcttttcaaacacacctcccttaggagagagaggtggccacatgaat

ggagaatgactgcatagcatgctgagggctgtggtaaaagaggctgaatggtgagctgcc  
aggtacggcatccttctgtgcagctgacatggcgctgacacatgtctgcctgaccaa  
ggggcagaagaggcttctcaggggaagtctgtttgaggtcttcagcagttcaacagctg  
gggaaagggtattccaggagcagtgagtttgatgcatgtgcgttggtggtgtgcttga  
agtagagcaaacggggtggaggcaaatgagcctgaaaaggaaagagatgggacaggatcc  
tactgtggaagagtttctgtaagcagtggggaagccacagaaggatttaagtgggcat  
tcacattgtgtttattttgagacaggggtctactgtcaccaggctggagtacagtggc  
atgatcaaggctcactgaagcctcaacctcccaggctaaa

>IGR1002a

aggcaaatgagcctgaaaaggaaagagatgggacaggatcctactgtggaagagtttct  
gtaagcagtggggaagccacagaaggattttaagtgggcatcattcattgtgtttat  
gagacaggggtctcactgtcaccaggctggagtacagtggcatgatcaaggctcactgaa  
gcctcaacctcccaggctaaagcaatcctcctgttcaacctcccaattagctgagagca  
cagctgtgtaaaaatttaatttttttttttagagacaggatgttgccaggctgg  
tctcgaacttttgggtcaagcgaagctcccatctcagtctccaaagtgccgggattac  
aggcgtgagccactgcacctggcctatttgtgttttagaaaaaactgctgggcccgggt  
gtggtggctcaccctgtaatcccagcactttgggaggtgaggcaggtggatcacaggg  
tcaagagattgagaccatctggccaacatggtgaaaccccgtcttactaaaaatacaa  
aaaaatttacctgggcgtggtggcatgcacctgtagtccagctacttgggaggctgagg  
caggagaatcacttgaatccggggggcggagattgcaggagccgagatgcaccactgc  
actccagcctagtgcagagtgaaattctgtctcagaaaa

>IGR1003a

ctggccaacatggtgaaaccccgtcttactaaaaatacaaaaaatttacctgggcgtg  
gtggcatgcacctgtagtccagctacttgggaggtgaggcaggagaatcacttgaatc  
ccggggggcggagattgcaggagccgagatcgaccactgcactccagcctagtgcaga  
gtgaaattctgtctcagaaaaacaaaacaaaagaaacaactgctggagagtttg  
tgaaggattagaggagcaagacgggatgctggttgggatggtggttgggagagcagatg  
ctatacacacctgtgtccggaggtggaaagggtcatcagccagaggagtaaccgccctc  
tcttctcagctgtttgcttgcactcgtgattggtataaactgaggagcaaatgtgtgt  
cctcttattcacgttgcttagtaagtaccagggtgtgcagtgagcatacaaaacatcaa  
acataatttcgtttggctgaactctggctaatacagaactagaaggaacagacagcttag  
agacttaagttggactaggaagaagttgacaggatggattagaagatagccactttagg  
ctgggtacagtggctcatgcctgtaatccagcactttgggaggccgaggtgggtggatc  
acctgaggtcaggagttcaagaccagcctggccaacacag

>IGR1004a

aactctggctaatacagaactagaaggaacagacagcttagagacttaaagttggactag  
gaagaagttgacaggatggattagaagatagccactttaggctgggtacagtggctcatg  
cctgtaatcccagcactttgggaggccgaggtgggtggatcacctgaggtcaggagttca  
agaccagcctggccaacacagtgaacccccatcttactaataatacaaaaaaatgaggc  
aggtgtgtgtggcaggcacctgtaatccagctactcaggaggctgaggcaggagaatngc  
ttgaanctgggaggtggaggttgagtgagccaagatcnngccantgcactcnagcctgg  
gngncagagcgagantctgtntnannaaaaaaaaaaaaaaaaaaaaannncaacac



tttagagagccaaggagagggtgtctgggtacttagggcaaaagcccagttgaggaaacg  
ctgggcgtgacagctaactggggatttttagtactccacctgggaatggaactcaaacttg  
agctaataaattgaatctagaaatcagcccaaggctagagaaagtgcctgccttgcctcc  
tagtggaagctactagaaactgagaagccaacctgtgtgtcataggccaggctgtgcct  
agctccataaggaagctctgcgttgccttagccttgaga

>IGR1005a

ggggatttttagtactccacctgggaatggaactcaaacttgagctaataaattgaatcta  
gaaatcagcccaaggctagagaaagtgcctgccttgccttagtggaagctactagaaa  
ctgagaagccaacctgtgtgtcataggccaggctgtgcctagctccataaggaagctct  
gcgttgccttagccttgagattccatccttagataatgtgggcacctgagattatgt  
gaaggagggcagagaaaaaccaagagcagggtcaatgacatggacagcaacaagcagagc  
ccccttggcatttgaacagagggtgacctttgtaactgtagccaacaatgtttccata  
aaagacagccatagatttgaccaatcatTTTTgattcattttccaataaataatta  
ttaccccttagatgccagttacagatagttattcattggcaaaagggtggaggatgata  
gccaggaggggaaagggtcagacttactgtcaatgtcatattccacacacagacaaaaggc  
atgtccatgaagcaggcacgggctgtggctgagtttctacataaatgtgtcagatga  
caagcatcttaactttcacttaatcctgaaggttttcacccctctgtttttgtttgtt  
tttttttttagacagaatctcgtctgccgccaggc

>IGR1006a

gacttactgtcaatgtcatattccacacacagacaaaaggcatgtccatgaagcaggca  
cgggctgtggctgagtttctacataaatgtgtcagatgacaagcatcttaactttcac  
ttaatcctgaagggttttcacctctgtttttgtttgttttttttttagacaga  
atctcgtctgccgccaggctggagtgaatggcacgatcttggtcactgcaacctcc  
acctcccagggtcaagcgatttctcctgcctcagcctcccagtagctggattacacgtgt  
gcactagcatcccagctaattttgtatttttagtagagacgggggttcgccatgttg  
ccaggctggtcttgaaactcctgacctaaaggatccgcctgcttcagtctccaaagtgc  
tggaattacaggcgtgagccactgcgccccggcctcacccactgttttataagtatccc  
ctcaatttgtttctcattgtcttcggaaattcaaaggcttgttgttgcattgttgc  
atccagagtccaggactgcctgactgggagtaaatggaatgtgagttgcattgccta  
atgaagcttatgtgatgacagacctgcttagagtctgatgtgtccttccatggcgtgc  
tctaaatcttctactttccttaccatcctgtcctcata

>IGR1007a

gtcttcggaaattcaaaggcttgttgttgcattgttgcattccagagtccaggactgc  
ctgactgggagtaaatggaatgtgagttgcatttgcctaataagcttatgtgatgac  
agacctgcttagagtctgcattgtgtccttccatggcgtgctctaaatcttctactttc  
ctttaccatcctgtcctcatatacaaaactgtaaccactaccataatcctgtggcagact  
acaactcacattagccattgaatgcaaatgagcctcaatcaagaagaaggaaattaaa  
atttacagtatgtgtcttccgggtggcctgaggagcctccatgactctcatagctatt  
tattgcccttggcatgctggtattttatgtgggcagggtgaaactggctgtggtcagggt  
gagacttgaagcttttgatttgccttattttgaaagggttaaaaagatgttacatgt  
tttgggtgaatttttagtactcatattaattttgtcacatctctgaagcgaggatgaaaa  
gagagtgtcaatcactgttactagatccatattcttacagagaacaagcttcaaaagg

caagtttgatgacacttgggtttttcccccttttaattcttttaataacagctt  
attgagatagaattcacctactacgaaattatccttta

>IGR1008a

tcatattaatttgtcacatctctgtaagcgaggatgaaaagagagtgtcaatcactgt  
tactagatccatattcttacagagaacaagtctcaaaaggcaagtttgatgacacttg  
ggttttttcccccttttaattcttttaataacagcttattgagatagaattcacct  
actacgaaattatccttttaagtgtacgagtcagtgttttagtatgttcatagaat  
tgtgcaaccatcaccattatctaataccgaacatttcatcacccctgaaagaaacccc  
acccccattatcagtcactccccatgcctccacacccgcctcccacccacagcctgtag  
caatcaatattctattttgcctctgtggattctctgttctgaataattcatatcagta  
gaatcataccatatgtggtctctgcatttggcttcttcccgtcacatactgtttccaa  
ggttcatccgggtgtggcctctgtcagtacttcatttcttttattgacaaataatg  
ccattgtatggatatgccacttttgttatccatcagttgattgacatttgggtgctt  
ctactttttttttttctttgagacagggcttattctgtcgtcaggtggagtaca  
gcagcgcagtcatagtcattgtagcctcaacctcccagg

>IGR1009a

ctctgtcagtaacttcatttcttttattgacaaataatgccattgtatggatatgcca  
ctttttgttatccatcagttgattgacatttgggtgcttctactttttttttttc  
tttgagacagggcttattctgtcgtcaggctggagtacagcagcgcagtcatagtca  
ttgtagcctcaacctcccaggcttgagccatcctcccacctcagcctctccagtagctgg  
gactacaggcatgtgccaccatgtcagctagtttttagagacaggggtttgccttg  
ttgccaggtggtcttgaactcctggcctcaagtgaacctcctgcctcggcctcccaa  
gtgctgggattacaggtgtgaaccactgtcccagccacttctactttttgctattatg  
aataatgttctatgaacatttgtgtagaggttttgtgtggacatgtgttctagtcc  
cttgggtatatacctaggattggaattgtggatcgtaaacattttatccttttgagga  
actgccaattgtttccaaagtactacaccattttcaatcactccagcaatgtaggag  
ggttccaattttctacatcttccaacagttattgtcttttaaatgttattctttaa  
tgaaaaaacttcattatgcacataacacacacacacaca

>IGR1010a

ttggaattgctggatcgtaaacattttatccttttgaggaaactgccaattgtttccaa  
agtactacaccattttcaatcactccagcaatgtaggagggtccaattttctacat  
cttccaacagttattgtcttttaaatgttattctttaatgaaaaacttcatttatg  
cacataac  
acacacacacacacacacacacacagacttataatggaaagccgaaagtctccagccc  
tgtttccccctccttagtccaagtccttcccagcaaacatcttccattttttttt  
tagttttccagtactatcattataattccaaagattgcttgattcattatttttctt  
ctctttttattatgaaaactttcaattatgtataaaaggagaatagtataaccaacccc  
tgtacacatcccagctgcaacaactgtcaacctgaccacttttaccactgtttttt  
gcttlatcagtgttagatgtcatacattgatttcctattgaagaaagagaattaccta  
attctatcacttccaaattttatagtaaatttttttagttcttctattacctttgtga  
ttttgataaatccctaaaccttgtgttctgttccatcca

>IGR1011a

aacaactgcaacccatgaccactttaccactgtttttgctttatcagtgttagatg  
tcatacattgatttccctattgaagaaagagaatttacctaattctacacttccaaatt  
tttagtaaaatttttttagttcttctattacctttgtgattttgataaatccctaaac  
cttgtgttcttgtccatccactgtgcacagtgttatttaactgccctcttgtccatgca  
agctggagatagcaatgccacctctcttttcttctgctttcacctcccagccattcca  
gctatagctcttatattatcagtggatagcaattatagctgttctccaaccatcatc  
aagcttctgtgctttgtctattgggtggttctaagacttgagaatcaagagaatttaca  
ttattatgactttaaatatcgttcactgtagagccatatgggtgactgaggattacttct  
ttttctgtagactcagtataacaatcctgtgccaatgggggaagaacgttttagacat  
ccagttgataccttttctgttcagaaatatatggaatccatagcactcttgaccaag  
gtgtcttattacatcttgtatggccttgtgtctttaattatcttgtgtgtatgtccc  
taactcgagagggaaccctcgagggggaagtggctttc

>IGR1012a

taacaatccttgtgccaatgggggaagaacgttttagacatccagttgatacctttctg  
ttcagaaatatatggaatccatagcactcttgaccaaggtgtcttattacatcttg  
tatggccttgtgttctttaattatcttgtgtgtatgtccctaactcgagagggaacccc  
tcgagggggaagtggcttcttctgtttgtctccatagcatttatagctcttggtaaac  
taaattgatttccctaaaagtgcacaccataatttcatttgcagtaaacatagccaa  
tacattaaatgccattgctgttagattctatatatactttatttatgatgagtataaa  
tatataaatacttaannataaagctatcaaaaactcataaattaaaatattcagctcga  
acacttgaatatttctctcatgatcgtcttttagcctttccaagaagtttccaacgt  
actctggttggttcccttcacaggacaggaattctgcaaaaanaacatttcattagcttg  
cattgtaagcatttgccttgcctgctgacttgatcaagcctactgtggcacttgt  
cacctgaacacttataaaaccaaggcctccagctagcctgactgggagttgtctctatc  
actaggccagcagggtttgcctattttgggtgcatactac

>IGR1013a

acaggacaggaattctgcaaaaanaacatttcattagcttgcatgtgaagcatttgtct  
tgctgctgtctacttgatcaagcctactgtggcactgtcacctgaacacttataaaa  
ccaaggcctccagcttagcctgactgggagttgtctctatcactaggccagcaggtttg  
cctattttgggtgcatactacttacacttctagaaatggttactgtataccattacctat  
ctgcttttgggggtgggtggcgcggggggagtgagctcttgagaggtgtgtcacagct  
aggtgcttgcagaggggtggaactgaagatgctggctcagacctgcccgggtgctctac  
tgggcttctgcatgactgctggactgctgagagagattcagtcattgtggcctcctgt  
gccattaaacagcagcacgcagcagccctaaagggtgggaaggattccagatgct  
acccccaggccactgctcagtttgaatctcagctctaccatttattaattgtattgctt  
aggatgtactacttaattataaaagcttcagtttctttgtaaagttgggacaattgtt  
tgctacttgctgctcataagataatggagagaattaaaagagagaacatgtgtgtg  
ccaagttcctatcccatgacctatcccattgtctacaagg

>IGR1014a

agtttgaatctcagctctaccatttattaattgtattgcttaggatgtactacttaattt  
ataaaagcttcagtttctttgtaaagttgggacaattgttgcctacttgctgcttca

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

taagataatggagagaattaaaagagagaacatgtgtgtgccaagttcctatcccatga  
cctatcccattgtctacaagggtgataggcccagagaggggatacatgtccttgttctct  
ctaaagccaattaattcctccactcgatattagataacatccactctgggctacaaggac  
ttctgccccctaatgatttctcttcttctgctctcttcagttcttctgctccactgga  
ccattccccaggtgcattaacatgctgggtatacccccaaccttaaaagagcttcctc  
actccataaccaccctgcagctgtgggtcagtttctctgcagccttatagctaaacatct  
tcaaagagtgttctgccctcactgttccttcttctgctcctctgccaccctatcctcgg  
tgagcccactccagctgggcttctcctcctcctctccattacatcagcctcacccatg  
gcctccatcagccaaaccaggggccttcttggctcctcacctgacctgtcctttcagta  
catttgacacagtcaaccctccctccttgagtgtctcaa

>IGR1015a

cactgttccttcttctgctcctctcggccaccctatcctcgggtgagcccactccagctggg  
cttctcctcctgctctccattacatcagcctcacccatggcctccatcagccaaacc  
aggggccccttcttggctcctcacctgacctgtcctttcagtacatttgacacagtcaacc  
tcctccttgagtgtcctcaacggcttctggggtaaccgccactctccagtgttctcct  
gcctcactggtcactcctcctcagggcccttggctggatcctcctcctgacctccatg  
tgttgatctcaggctcagtcctttgatctctcccttctgtcattcagattttcagcagt  
atctatctaaggactctccttttattgcaagttctgacctctcccctaagttccaga  
cttttcaaccatctctcaacaccttcacttggctatccaagagccaccttacatgtac  
gatgtacaaaattgaactcttgatcttctgctgaacctccagccctgccttgccgccagt  
cttctcatctctgtaaacagtactgaccatgccagaggggttgggcaggaacaaaga  
ggctcatctttctccctgtatcttacccttacaaccgatctgtcagcaaatccttct  
ggttttatttttagtcatatcccaaactctgttcacctcaa

>IGR1016a

ttgatcttctgtgaacctccagccctgccttgccgccagctttcatctctctgtaaac  
agtactgaccatgccagaggggttgggcaggaacaaagaggtcatctttctccct  
gtatcttacccttacaaccgatctgtcagcaaatccttctggttttatttttagtcata  
tcccaaactgtttcacctcaactgctccattctgtccacgccaccatcatctctagcct  
ggtttactgtggtagcctcccaacaggccatcttcttcattctgtccacgccaccatcg  
tctctagcctggtttactgtggtagcctcccaacaggccatcttcttcattctgtccac  
gccaccatcatctctagcctggtttactgtggtagcctcccaacaggccatcttcttct  
atgctttccccctttcagcctatttaccacacagtagccagactgaccttttaaatcac  
gtaaatcagattgtacagcttttctcctgcccagctctgcaggtgttccctgccatac  
tcgtggtggaatctaaaggccttgtgtgatctgtctcctggaaactaccctcactcac  
tctgatccagccacactggccttctactggctttaaatacaggaagttagttcatttc  
cactcctaaggcctttgcatacctcctccttctgcctggaa

>IGR1017a

ctttgtcctgcccagctctgcaggtgttccctgccatactcgtggtggaatctaaagg  
ccttgtgtgatctgctgtcctggaaactaccctcactcactctgatccagccacactgg  
ccttctactggtctttaaatacaggaagttagttcatttccatcctaaggcctttgc  
acctcctccttctgcctggaatggtctccctagtttagtcatgtggcctgtcctcctcaatt  
caaatactgtcagataatgtaccagctcctaagtcagccccctcccccatgactctt

atgtttttatttctatgttttcttttagcacgtatcactgctggccatcattttaca  
tgtttgttttctaactctcccattagaacattccatgagaacagggactcggcctgcgt  
gtcttttagtgacacgtctcagcacctagaaccacaccagcacttgaggacttcagca  
aatacttattgaatgagtgatgaatgaatgggttgaccaagggtgctgcagctccaag  
gagtgtttagaagtgaggctgctgtccaccaggagccacgcggccggcttgccaggaata  
cagtgacagcttaccaagcccggcaggccccagagggttctgtcagccgttcaggaatc  
ggalcagctgcttgctgtggaactgctgtgcagtcgc

>IGR1018a

aatgaatgaatgggttgaccaagggtgctgcagctcccaaggagtgttagaagtgaggc  
tgctgtccaccaggagccacgcggccggcttgccaggaatacagtgacagcttaccaagcc  
cgccaggccccagaggctcctgtcagagccgttcaggaatcggatcagctgcttgctcct  
gtggaactgctgtgcagtcgacccaggcagcagtgctccttctcatggtggctgtagaa  
ctgccggagcacagtcgcagccctgcagaaggttcttctcagttgtgtctggaaaga  
caaatgccacagatagcaatgtgccagctccatttgaggatgggagagagattttcct  
cttgatttcttctccaggaggacaaatggagggtgagtttgctcaactacagacctgtc  
ttcaagtattccactgaagggaaggtgcttgccacagacataaacctctgtcaacaacct  
ctcccaattgcaaacgcagcagccttctccccagaacctcccagtttcttcttcttggga  
ggattttgccgaaagggtacctgaataaagtcacccatgaggaaaaggcacagtgggga  
ctagaatgcaggacctctgtcgtctacagcccagttctgcgtccgtgtctctatacctc  
atgagctattctgctatgaaaagtgccacatgagctctc

>IGR1019a

cagccttctccccagaacctcccagtttcttcttggaggattttgccgaaagggtta  
cctgaataaagtcacccatgaggaaaaggcacagtggggactagaatgcaggacctct  
gtcgtctacagcccagttctgcgtccgtgtctctatacctcatgagctattctgctatga  
aaagtgccacatgagctctcagtcagggtctgtcttgttcccagagggtttaaaatcc  
agcttctccctggaaatcctgcagtcctgttgaataaatgagtcacatcctttggcctga  
actctgctgctttggccagcactctccgtgtggctctccccatgggagaggagagcagca  
catggcccaagtgaggagctaagacattttgccaggcagcaagagataagtgcacagatc  
agggaaagggtgctctgggagatcagaggaggtctgggagcaggtgccattgatctgagc  
cttgggcagagcttctgaaggggccttttgccccaaatgatcgggagtgagaatctcc  
ttggaatgccagcaactgtgagggtctggccacatggctcttctggggggcccttagcct  
tagagaaggggaatggacaagagacaagtcattgggaaccaggagagggttgtgtctca  
gtctgaacctggcctggtgtgtcctctcattttcactga

>IGR1020a

agggggccttttgccccaaatgatcgggagtgagaatctccttggaatgccagcaactgt  
gagggtctggccacatggctcttcttggggcccttagccttagagaagggaatggacaa  
gagacaagtcattgggaaccaggagagggttgtgtctcagctgaacctggcctggtg  
tgtcctctcattttcactgaagaacaaagatgcagaacctggagagggttcttagcttg  
agcccagttcctttatccagttcagataaagaaagctatccccagcctctccccgacat  
gtctgtgtcccttgatactcaaagtgtgtccatggaccagcagcatggacatcactggg  
agcttcttagaaatacagaatctcagaccaccctgccccaccagaccctctgaatcag  
aagaacagtgcagaagatgctcaggggttctatcagcagcgtgtccaagcagcttcaa

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

gttcttacatatttttttctgatgatcaagataacatatatttactataaaggtaca  
tatttcaacaaaaatacattcactcatcccaccagccagaggtactattgctgttaat  
attttgtaaataatcgtcacacttttaaaatacttttaaaataggggtcaactgttga  
tactgtttgtaactctttactctttacatataccataa

>IGR1021a

tctgatgatcaagataacatatatttactataaaggtacatatattcaacaaaaataca  
ttcactcatcccaccagccagaggtactattgctgttaatattttgtaaataatcgtca  
cacttttaaaatacttttaaaataggggtcaactgttgatactgtttgtaactctt  
tactctttacatataccataagcatttctaagcccttcggtggtattagagaacatggg  
attgagagctgcgtagaaacgcattgcacagtgggtactgtcattgtcaggccctatcg  
tggcagattttgcttctgtaaataagcggcagtgagtaaaactatagaatctttgtgt  
catctcttattatgtaggctaaattctaggaatgcagttcatatttaacgtttttca  
ggaaagtctagaccagactgaggcaccagaatcccaggctacagaagcttccccttcc  
cctgtggggcgtgatgtccatgggcagagcggtagaaagacatttacttaataactg  
actgagagtcactcctcgttctgattctagttggaaatgaagagtgtgtcagtatctt  
tgggctctgggggccaagaaacagacctctctgggctttagggcagtcgaggtggaag  
ggacacgggctgatggggggcggcagatgggtgcctgtgtg

>IGR1022a

catgggcagagcgggttagaaagacatttacttaataactgactgagagtcactcctcgt  
tctgtattctagttgaaatgtaagagtgtgtcagtatcttgggctctgggggccaaga  
aacagacctctctgggctttagaggcagtcgaggtggaaggacacgggctgatggggg  
gaggcagatggtgcctgtgtgtctggaggtgggcagacatgcatgtgctgcagagggaa  
cagtgagattcaagaaaacaaaaagtcagcccttctcttttaccacaaaccttgg  
gagattttctgaaacgctggccttgagcctggaaattaaacttaattttgacctata  
tgccacatagtaggaaaaaacctctaaagatatattttgaaaggactttctaaagga  
aacaaggataaaataagaattgaaaagagtctgcattaaatggaaaaactttaaaagaat  
gcacctaagggcagctttagtgcaaggccttaacgttttagtgccttggtatcgagc  
gagggggcgacactccatcctgccgtggccctggactcctaccacctgcctgtctagct  
ctggctgctgagtggtctgccagtgaggcaggtgacttgacagcctggctgacc  
tcacagttcagaactgcttagggagtactcagaaggagg

>IGR1023a

agtgaaggcccttaacgttttagtgccttggtatcgagcgagggggcgacactccatc  
cctgccgtggccctggactcctaccacctgcctgtctagctctggctgctgagtggtct  
gccagtggctcaggagtgacttgacagcctggctgacctcacagttcagaactgctt  
agggagtactcagaaggaggcctgtccctcccgggaatgtcaggaaacagccacttggg  
agatttctctgtggcagtactctgtgaggttctaactcgttcttgaccagcctcac  
tgaggaccatataaaatccagcccagttggcactgcattcattatctccatcctgccag  
gtagtgacgtagtgctgtatatgagaaactccttcaaaaaacagaggtatttgaggttc  
attatggaactctctgtagaattatgaactttagctctcttggtaaataaggaaatngct  
ccaactactgtccaccaagaaaccttcatcagccagcagcttgccttctccactt  
tgctgttctcagacagccttgactcatagacacctgacaggtgttacctgtgaagcc  
caggacctagaccagtgcccttcttccagcaactgccaaagagtagaatgctaccaactt

agagatactaaaattcttgtcccccgaagaaataaaatc

>IGR1024a

agaaacccttcacagccagccagcttgctcttcccactttgctgttcctcagacagcc  
ttgacttcatagacacctgacaggtgttacctgtgaagcccaggacctagaccagtgcc  
ttctttccagcaactgccaaagagtagaatgctaccaacttagagatactaaaattcttg  
ttccccgaagaataaaatcaataggctggattttggaaagatgtttctttgggaaca  
caaagaagtaccttttctctgcataccacctttgtaggttttgaaaatagcaacatt  
cactgttctgaaatatcttaacatgtaagtaagcagtgctgaatcttcgaggggaagaaa  
agagtgaagagtgagatcgtgaactccaggaggatgaagttcaggggaggc aaatgagac  
gggtaagagtgaaggcaggcagtggggattattctaggagatgtttgtgtgtgagagg  
gaggtgagtgaggactgagtgaaagaggggagttaaggacgggagggcagcagtgctcctgg  
cctgcacccgggggtcttccagaaacagcccagatggattgccccagactcggcatcctg  
gatggtttgatcctttccaacccgggtccctccttctagaatcatcgcttctctgcacc  
tgttcttgcttttaatcgtggttatatcatctcacataa

&gt;IGR1025a

tgaagaggggagttaaggacgggagggcagcagtgctctggcctgcacccgggggtcttc  
cagaaacagcccagatggattgccccagactcggcatcctggatggttgatccttcca  
accgggtccctccttcttagaatcatcgcttctctgcacctgttcttgctttaatcgt  
ggttatatcatctcaacaataacactttgactaactcaagagctggattccaatcaacct  
tgcaatcaccttcagaatcactttcatatcttcacatgtggaactgaggtgcagagagg  
tgtgaagatgtgctgaaggccagccacacagctagtcagtggcagagctgggtctaaaac  
cacaggcagctctacctccaggccctcagccctcacccttctccaggcctggctcttag  
tgaggtggcccttcccttggtttgtagagccttctcagcagtgccacaggcctccaga  
gaccagtgctcaaccgggtggactcttggcttctagtaggagccatctcggttggatgg  
acttggagattttatacacacacacacacacacacacacanananatacanananata  
natacanacananatatatananacacacanananananananacacacacacacacaca  
cataaactgttgcgccaggtgcagtggtctaatcccagcact

&gt;IGR1026a

tggactcttggcttctagtagggagccatctcggttggatggacttggagattttatacac  
acacacacacacacacacacacanananatacanananatanatacanacananatatan  
anacacacanananananananacacacacacacacacacacataaactgttggccaggt  
gcagtggctaatacccagcactttgagaggccgaggtggacggattgcttgagcccagaag  
ttcgagacaagcctgggcaaaatggcaagactccatctctacaaaaaatacaaaaatta  
gccaggcgtggtggtgcacacctgtctgccggctacttgggaggctgaggttaggaagat  
agcttgagcctgggaggtggaggctgctatgagctgaaatgcaccactgcactccagcc  
tgggtgacagaacaagaccctatctcaaaaaaaaaaaaaagtgtgtattgcccttcaga  
atctcatcctgtatcggactccccgggataactaatgaaatgagatagtcagctaaaggc  
ccgaagagcagttccctcatgaagcaggatgggccctgttctatggtctgggtgctgga  
gtgtgaccttgcacaacacacagggttcactcctggccatcatctccctagtttgca  
tggaaagcaggtagttaggagaccactgtgaaattgaggc

&gt;IGR1027a

tccccgggataactaatgaaatgagatagtcagctaaaggccccgaagagcagttccctc  
atgaagcaggatgggcctgttctatggtctgggtgctggagtgtgacctgcccacac  
acagggtctcactctgccatcatctccctagttgcatggaagcaggtagttagg  
agaccactgtgaaattgaggtttggggctttcattctcagccgtgtgttccatgaaaa  
caggaaactgaaatgcacaaaactattgatacggctgtagtcattgtttgtcagagaaaa  
tgcactatcagctgtcaaatctatctcctccactacagatagaggggtgggggtgaggc  
agcacaggaggcagagagggcaggtgcccaggcagccccgaagcagggtgtgtggacgc  
tgcccagcaggatggtccagaccgagctggaggggagttcggccggccagagcaagctg  
aggagctctggacggcgagccccggaaccagagggctgttaggtggccaggctgtggaa  
gaggaggggctctggcgataccttttctgttgccataggaagctcttagacaaaatgaa  
agctccctcaacctgtcatctcaatatctgtttctgtgagagtattggttttcagaaa  
tgtatgggccagaaaaattctctcattcaacaggcattta

>IGR1028a

ccccggaaccagagggctgttaggtggccaggctgtggaagaggaggggctctggcgat  
acctttctgttgccataggaagtctcttagacaaaatgaaagctccctcaacctgtcat  
ctcaatatctgtttctgtgagagtattggttttcagaaatgtatgggccagaaaaatt  
ctctcattcaacaggcattattagtgccctctacgttccaggcactatgccaaagcta  
agtaaaaccaagagggttttcttgaccaggatctgagtcaggactacagcatgtaag  
ctttctattacatgtcttctaaatcaagtgaaccagaaagacaaaaacatgcttaagag  
taaagatcagacttctcgttctttgaaaacatctaacaccttagagttaattgggcccg  
ctcgttttccattagacaagtttctgttcagacatttggggatggatnccccattgc  
taaaacagaccgtgggacggcttctaccttgagggcagcaaatgtctgttacgggtca  
actcgtgtcacagagtctgtgctcaggcagaaatgagagagcaagagacagagttaacct  
ccaaccggacagagaagtcttgatgagcagctctcactccctccaactgaggaaacttc  
ctacaaacctcagaaaaaagagtggcaggggagaagcct

>IGR1029a

gcttcttaccttgaggcagcaaatgtctgttacgggtcaactcgggtgcacagagtctt  
gggtccaggcagaaatgagagagcaagagacagagttaacctccaaccggacagagaagtc  
cttgatgagcagctctcactccctccaactgaggaaactctacaaacctcagaaaaa  
agagtggcaggggagaagcctcgtgtgtgccctggactgccaccaaccaccagtccaa  
cttctctagcagctgttaacgtttcatgcctagaaatactgagagcatcaccagaacat  
ctggagagatggtgccagataggtactcacttctgctctgtgaggctgttcaaagttt  
gatgatctctgttaagggtgatatcgactgtgtccgtggacaaagttgccggcacatgc  
tagcaggaagaacagaggggggaagcagttgggagngagaccattaataggtgtcgatt  
tgcagtgacaatgtgagncaattagtttatcaggagaagctaacgatncaatgctgacaa  
agatatctctatatagatttaaaattgctgaaaccgagggaaaatgagttacattgg  
aaatttctgttacaccagattgtcagtcacttggggccaatcagcacctctctccagga  
gaaaaaatgcctcacaacagggtaaaatgttcctgtgaaa

>IGR1030a

aattagtttatcaggagaagctaacgatncaatgctgacaaagatatctctatatataga  
tttaaaattgctgaaaccgaggggaaaatgagttacattggaaatttctgttacaccaga  
ttgtcagtcacttggggccaatcagcacctctcttccaggagaaaaaatgcctcacaac

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.



aggtaaaatgttctgtgaaatcagaccaataggaaaatgaaaccttttaaaaaattaa  
ctacaaagttcagcataggaaattacaccataaattgctcttttagattaatcttatcag  
cttggggctgctgctggctttttgctttgcatagaaggagaggccacaggtgtccgaat  
ttgttgtaatgcagtcctcctggggaaagatagagtaatatcaagaaagtttacttgaa  
aagtattttaacctggcttctccaagtacaggtggcatcttgaaactgtcctgtcatg  
gaaaagctgatctggggtccttctctgcatagaggcagaataacaggcagactctccta  
ccccagcactgggggnacaatgttctcccaagtttaggtgtttgagaaggacaggtcgta  
tcaggtgaggcctagtttgggtcccagcaggtccataaggtccttaccataaggaagcc  
cttggcaaggtaggtctattctgaggtttcaggaatgact

>IGR1031a

ccttctctgcatagaggcagaataacaggcagactctcctaccccagcactggggnacaa  
tgttctcccaagtttaggtgtttgagaaggacaggtcgatcaggtgaggcctagtgtg  
ggctccagcaggtccataaggtccttaccataaggaagcccttgcaaggtaggtctat  
tctgaggtttcaggaatgacttttttttttttctgagacagggtctcactctgtca  
cccagggtgaaatgcaatgttgtgatcagggtcactgcagcctcaacctcccagggtca  
agtgatcctcccacctcagccccctagcagtaggtgcgtgccaccgcacatgcctggc  
tcatttttatttttattttgatagagataagagtcactatgttgcttaggtcatc  
tcaaattctgggctcaagtgtcctcctacctcagtcctccaaagctctgagattacag  
gtgtgagccacatgcctggccaggaatgccacttttgatggaacctaaacacatcc  
tcagctaattaggaagagctacagtccttaccactacaatcagccctcctagtc  
gtgccccaccaccgcctgtgtttttattgaattcatgtggacacaataaggtgct  
cattgcctcaccacagcagtgaaagtaaggacccccaccac

>IGR1032a

gccaggaatgccacttttgatggaacctaaacacatcctcagctaattaggaaaaag  
agctacagctctaccaactacaaatcagccctcctagtcagtgccccaccaccgcct  
gctgtttttattgaattcatgtggacacaataaggtgctcattgcctcaccacagcag  
tgaacgtaaggacccaccactcactcaggtgcctgggacctgtgcaaggccaccacc  
tccagtaagggtcatgggcagcaggattctgggacctgcctgccccctgctttctc  
ccagaaccttcccttcccttggctctgaccttctttccctatgaattcttttttt  
tttttttttgagatggaatctgtctgtcaccaggctggagtgcagtggcgtgatc  
ttagttcactgcaagctccgctcctgggttcatgccgttctcctgcctcagcctccccg  
agtagctgggactacaggcacctgccaccacgcccggctaattttgtatttttagtag  
agacggggtttaccgtgttagccaggatggtctccatctcctgacctcgtgatccgct  
gcctcgccctcccaaagtgtgggattacaggcgtgagccactgtgcctgggacctccta  
tgaattattctggaagatcatctaaaaatgtgtgtgt

>IGR1033a

acctgccaccacgcccggctaattttgtatttttagtagagacggggttcaccgtgt  
tagccaggatgggtctccatctcctgacctcgtgatccgcctgcctcggcctcccaaagt  
ctgggattacaggcgtgagccactgtgcctgggacctcctatgaattattctggaagat  
catctaaaaatgtgtgtgtaaggtttgacctgttccacttccccccccccctca  
ccacccctgccccatactctgtcaccaggctggagtgcagtgggtgatcatagcttac  
ttagccttgatctcctgggctcaaggcattctccagcctcagcttcccagtagctggg

attacaggcacatgccaccacgcctggctaattctgtatTTTTTTTTTTtagtag  
agatgggggttcaccatgttggctaggctgggtgcgaactcctggcctcaaatgatcca  
cccacctcagcctcccaagtgtgggattataggcgtgaaccaccatgccggccaagg  
tttgcctctgtttggatctttctcccttattattattattataaattgacaaata  
agtattgcacataattgtgctgtatgataaatgtttgaaatgtgcatgttatggaatt  
gctacatcaagctacttatacaatacttcacataattatt

>IGR1034a

gtgctgggattataggcgtgaaccaccatgccggccaagggtttgcctctgtttggat  
ctttctcccttattattattattataaattgacaaataagtattgcacataattgtg  
ctgtatgataaatgtttgaaatgtgcatgttatggaattgctacatcaagctactat  
acaatacttcacataatttttggtaagaacatttaaaatctactctgtgatttatt  
attttttgagatagagtcttgcctgttgcccagactggagtgcattggcgcagtctc  
agctcactgcaacctctgcctcctgagctcaagcaattctcctgcctcagcctccgagt  
agctgggattacaggtgcctgccaccacgccagctaattttgtattttaatagagac  
agggttttacatgttggccaggctggctcgaactcctgacctcaggtgatctaccac  
ctcagccctgcaaagtgtggtggattacaggtgtgagccactgcgcctggcctgtctca  
tgattttaagatacaagacattgatataactgttgccatgtcgtacaatggctc  
tcttaacttaactctccagttgaaattttatactttgaccaacatcttctgatc  
accacctcccagccctggtgacctcatcctactctct

>IGR1035a

tgggattacaggtgtgagccactgcgcctggcctgtcttcatgatttttaagtatacaag  
acattgatataactgttgcaccatgtcgtacaatggctctcttaacttaactctcc  
cagttgaaattttatactctttgaccaacatcttctgatcaccacctcccagccctg  
tgacctcatcctactcttgcctccctgagtttggctttttatattcacatatgcg  
tgagatcatgtggtattgtctgtctgtgcctggatttttacttagcataatgtcctc  
caggttcatccatgttgtggtgaatgacagcgttctcttttttaaggctgtatagta  
ttccactgtctatataatgtttggatcttatgcagtgccctcaagtctgtgaaggaga  
gaatctggataattgtatcaggaggtccttagaccataattaggatccttcattgggac  
tgggcagcaaggttacaaactaaatgcagtggcttcagatgcaaaccacctgagatga  
gccacacctcacaggtgaggggtatgggtccccacaacactgcccttgcctcagacgcca  
gctgcacattcaggggtcccagcccaccctcactgctgactggctgcaaatctgggagt  
ttccactacctcaggttcagaatgcactaggatgact

>IGR1036a

actaaatgcagtggcttcagatgcaaaccacctgagatgagccacacctcacaggtgag  
gggtatgggtccccacaacactgcccttgcctcagacgccagctgcacattcaggggttc  
ccagcccacctcactgctgactggctgcaaatctgggagttccactacctcaggtt  
ccagaatgcactaggatgactgacagaactcaggagagtgtatactgaaggccacagtt  
ttatcataacaaaagcattcaaatcagaaccagccaaaaggagacacaggggagat  
ggaggaggggcccaaacacaaagtctcattgtcttcccgtgtggcgtcagaggcatca  
cttctcagcactttgacgtgtgacaaaatgtgactatttctaagcaggagggtcact  
tgagcttgggggtccagagttttatttgagtcttatcatatagggtgtggtgatggact  
cattggccactgggttgaactcatcttctggtctcctccgggaggccaggctgatatc

2825.1025-002

acagaacctcagtgccgtggccagccccccatggctgtattgtcagcaaaaactaccta  
gggcccaccatgagtcacttcactgcataaactctcagagaccaccatgaataataaga  
tactcctatcacttgggaaatccctaggaatttggggcta

>IGR1037a

ctcatcttcttggtctccttcgggaggccaggtgatatcacagaacctcagtgccgtg  
gccagccccccatggctgtattgtcagcaaaaactacctagggcccaccatgagtcact  
tcactgcataaactctcagagaccaccatgaataataagatactcctatcacttgggaa  
atccctaggaatttggggctacctctgggaactggtgacaaggactagccacgttgtt  
actccaagggtttagctggttaggacctccaagagccaggacaaggccagacttctt  
ggataaagggtgattcttcactgcacaaactggaggagagttagagaagagcaggtggt  
tgcttccaaagcaggtggggactttggatccgatgaactattatgtggaatgaagtacag  
cagcgggtccagttaacacaggaggagctcatcaagctcgggacttgctgggtggagag  
cttctgccaaataggttctcaaggagagtcggggatgcagaaggggagctggtggggagg  
gcgggggttctggggcgtctgtgggggcagtggaacagccatttatgtgtccatctggtgt  
ttttctaagcaccactaaaagggcagaccctgggcttgaggctctgagggcagagctggt  
gagtgaagggaatattaggtgggcaccttcagctcaga

>IGR1038a

caaggagagtcggggatgcagaaggggagctggtggggagggcgggggttctggggcgtct  
gtgggggcagtggaacagccatttatgtgtccatctggtgttttctaagcaccactaa  
agggcagaccctgggcttgaggctctgaggcagagctggtgagtgaagggaatatta  
ggtgggcaccttcagctcagaagcagaatccagctgtttgtttgttcaatggtgaaa  
tgaggccaaagatgaaaggataaactgtccagaacattcgagagtgaccaggagtctccc  
cagagggcagaagtgggggatgggccatctcgcctgcaggacagcaccatggcagctg  
caggtgcggcaggtgggttagagatggggaagggtgggtgcctgcattgtcagggaacaaaga  
ggagggcagtgatcaccaccactaccaccactgcgaaggagtctccagacctgcaggggcc  
atgggcagtgccctggcggggtgtgtgggcctgacaccaaagttcaggaggagggtga  
atactgtctctgtggtgtgtcggtcacaggccccctccccctccctgtgtgagagctg  
agaaccagcgccggccccccatggatgcagagttttcttcaggccctggaacgtagc  
agttatgagcactgcgttgggagtcagcaaatgagccc

>IGR1039a

ggtgtggtgggcctgacaccaaagttcaggaggaggtgaatactgctgtctctggctg  
tgtcggctcacaggccccctccccctccctgtgtgagagctgagaaccagcgccggccccct  
ccatggatgcagagttttcttcaggccctggaacgtagcagttatgagcactgcgtt  
gggagtcagcaaatgagccccctatcaactctgtgacctgagtagatcataactctct  
ctgggtctcgattttctcacctgtgaaatgggaataatgtggctcttctgtgaggagc  
aagtgagtggttccatggaagacttggcatgtgtcatccagaaagggggtctgtaac  
agaggctgctatagtacacgggtggctaagagagcggacgctgggcccaggtggtctgtca  
ggcctggctgctgtgcctcctggctgtgtgacctgggcacgctactcagcctcatctgt  
gaaataggggctatagctgtccctgtctcatgaagttgctctgaggaatgaatacattta  
aagttttcaagtatttagaatagtgcctggcacacagtgagtgatgatgataatgatg  
actcctatcttgagttgctgaaatgactgatgcttcatctattaggcaagcccaagctctg  
gacagggcagtgagatctggccagacgggccctccccac

>IGR1040a

tccctgtctcatgaagttgctctgaggaatgaatacatttaaagttttcaagtatttaga  
 atagtgcctggcacacagtgaagtgatgatgataatgatgactcctatcttgagttgct  
 gaaatgactgatgcttcatctattaggcaagcccaagctggacagggcagtgagatct  
 ggccagacgggcccctcccccacaggttctcctggatgtgcctcctccgtcttgagttgc  
 cgtccttgtttctggtgggtcacgggtcctccactgcagcccgcctacttttagtatctgg  
 attcattacaggggaacagacacagctgtgggtgctttagtcaggaaaggattcatgcag  
 gaaagtaggtgcttctaagaatgtcaggagggtggaggggcaggtccaggctgggccc  
 agaaccctaagacctgaccactcagcgagccaccctgaggctgcagtgccgggattc  
 caaagctgctgcctctgctgacccctacactgtgagctgctccaggagactcccgtc  
 tgactccacaccatgagctgctcaaggacaccctagtctgaatgaccaggtacatgg  
 tatctgccgcccctcccacagcttgcagccctcatctaattggaaaagccagatgc  
 tcgcttcaaaggagtcagaaacgcggcagtcactaggag

>IGR1041a

gaccccctacactgtgagctgctccaggagactcccgggtgacttccacaccatgagt  
 ctgctcaaggacaccctagtctgaatgaccaggtacatggtatctgccgcccctccctc  
 cacagcttgtcagccttcatctaattggaaaagccagatgctcgttcaaaggagtcaga  
 aacgcggcagtcactaggagaaaggaatacaggtcgcacaatgcagcccagctccacg  
 ggctcgttcatgatgcttgcgtgccagccattctgtggtccgagtcgggtgaatct  
 cacctccctccttctgtcagctcctgcagggcagcaccagagagtgcttccaacc  
 ccacaggcttagtcatgaaaaaggtgagacttcttgaggagggggacttaagcagag  
 ttagggatgagccggttagccaggagcaggggctgcaggggtggggtgagtcggggcaa  
 gggacagcaggtggaaggccccgaggtcactgaagagagggtcccaggaggggagcacg  
 ggccgaggggacccagcagcattgcagggcggcgtgacagaggcagctggcgcgaat  
 cgggtgggatggtggcagggagagctgtgggctcttgagtcatttggcccagcacagtgt  
 ctagggttaagacctggtgtcttggtgcccacgggacctga

>IGR1042a

cccagggtcactgaagagaggggtcccaggaggggagcacgggccgaggggacccagcca  
 gagcattgcaggcggcgtgacagaggcagctggcgcgaatcgggtgggatggtggcagg  
 gagagctgtgggtcttgagtcatttggcccagcacagtgcttaggttaagacctggtgt  
 cttggtgcccacgggacctgactggttctgaatcccagctctgggtgaccttgaaaagt  
 tccccatccaggcttctctgtaaaactgggtgattacagggcgagggaatactatag  
 aaggtgacaaatatgaagtgttgggtggtgaccggcatattgcaagccccggaaaat  
 gccagcaatcaccatcaccaccaccatcattaatagcacttggagtgactgaatgt  
 gggggtgaggagagcaggaagtcgaggtggccccaggtctctggcttgggaggaggc  
 aggggagagggcaggcggcgggtggnagccaccagctgaggggctgctacgggccatact  
 ctgagaacaggggaggtccagcctgcaggcagtagacatggagggtgactaagccaagg  
 ggaagaacacagtgttgcgtgaaaaaggggtcccgaattcagaccccgagagagttcttg  
 atctgcacgggaagggaattcaaggtgagtcgtggtgtgt

>IGR1043a

gggtggnagccaccagctgaggggctgctacgggccatactctgagaacaggggagggtc  
 cagcctgcaggcagtagacatggagggtgactaagccaagggaagaacacagtgttgc

ggaaaaaggggtcccgattcagaccccgagagagttcttggatctcgcacgggaaggaat  
tcaaggtgagtcgtggtgtggtgaaagaaaggatgtagaaaactactcagagtaggggtg  
tcctcagaaagcatgagcaggaacgccttgtctgcttaagcttttcttatataggggtc  
ttgtctatacaaaaagccaagctacattatgtctatgtgcaggtgggctgacagtgtcaca  
aaatttagtactttgttgatttaaataatgtttatccttggccttttagtgagtaagta  
catcaaagcattactgtaaatagcttgaaagcatatattgttatgagacatcaggacacc  
cagacattctgtctgttaggagtttgccttgcgggctgactaaactgcttccctggc  
gtaaacatctcatgaccatgggtagtgactggcaaggaatatgcctagctagtttaaga  
tggagttgattttaaatgggtgtcacctggctctcctccactcctgttgacctaacaat  
atggccaaggggtgagagaagacaggggacaagaaatgag

>IGR1044a

ggagttgtccttgcgggctgactaaactgcttccctggcgtaaacatctcatgaccat  
gggtagtgactggcaaggaatatgcctagctagtttaagatggagttgattttaaatg  
gtgtcacctggctctcctccactcctgttgacctaacaatatggccaaggggtgagaga  
agacaggggacaagaaatgagccagggcactcctgcgacactggaagtggtgaggcagg  
gtgcagagtcaggcatgagagagggccaggaggaggagcagtggtcagcggcagcaat  
gttccctgtaggtgaggctagataagggcagacatgcgttgcgtgcacggagtggagtga  
taatcagtgacctcatgagatatctgagtgagttgggggcacaggaaaggccagatga  
ggtggaactcagtagggcatctgggagggcagctgtgttgggctgcaggctgcgtcgtg  
ggtgtcagctgtgttctgaatgggacacaatcaagcacaggtgccccagctcagcgag  
cggcagcttcaccttgcagttgttcacacacaacacgggaagacctcacacgtcatat  
ccaagccaccccaaagcctctcctttcactgatgtgacatctcggattgggtggtggg  
gaaggggcgggggtagagatggaacaaaattgacaaaact

>IGR1045a

aatgggacacaatcaagcacaggctgccccagctcagcgagcggcagcttcaccttgc  
gtgttcacacacaacagggaagacctcacacgtcatatccaagccaccccaaagcct  
ctcctttcactgatgtgacatctcggattgggtggtggggaagggcgggggtagaga  
tggaaacaaaattgacaaaactggccatgagttgctcattgttgacgctgggcaatggatg  
cttgggagtgactttcgttatatttgaattttctgtaatagaagattttaaaattgta  
attgcatagcaaatgtaaatattaacatatatgcacatttatattatatttatanatc  
tatactttatggattatataataataactatttaagtaataatgtatacgatagcagtata  
atgtatacatgcatttacacacacgccccctcctcagctcctccactaccacaagccat  
cgctccccaccagcatctctgcaggcaccttggcgctcatctccctgctccgccttcgcc  
ctgcgttgcgttctccacacagcagccacgggtgactttgttaaatgtgagtcagaccac  
atcactccattccacttagaatgaagcccggtcctggcctctgagggcctgctgggntcc  
tgctgcccttgccgtggcctctgctccagcccaggggcca

>IGR1046a

tgcaggcaccttggcgctcatctccctgctccgccttcgccctgcgttgcgttctccaca  
cagcagccacgggtgactttgttaaatgtgagtcagaccacatcactccattccacttag  
aatgaagcccggctctggcctctgagggcctgctgggntcctgctgcccttgccgtggcc  
tctgtcagcccaggggccaccgtgagtgctgggaaggcatccccagctcgtcttg  
ctcaagaccttagcacctgcagttcccttcccttgatgactttgccccgatctgtgcat

2825.1025-002

gggngtccccnccccctgtttcgtcccgatctctgtcccatcttatctcatggggagg  
atttctcaacctcctcgcataacacagcactctccctgctgtgcagccccggactgttc  
tatttccacggtagcggtaccaccgcccacacactgagtgtctctcgttggcttat  
tctgtctccctgctagaagcaacctgttttgtttagtggacccccagcacctagagcag  
ggcttggcaccaggaaggcctcaatccatacttgttgaatgaatgagtgagctccat  
ttccacggagccactgagacgtggctgaagtaacaacactagaagtcaggacacagctg  
gggcttgaagctgggactagtccacctgagccccggc

>IGR1047a

caacctgttttgtttagtggacccccagcacctagagcagggtctggcaccaggaag  
gcctcaatccatacttgttgaatgaatgagtgagctccattccacggagccactgaga  
cgtggctgaagtaacaacactagaagtcaggacacagctggggcttgaagctgggacta  
gtttcacctgagccccggctatatgctctgcctgtgttctgagaggggaggggatgg  
ggcccagagcacacacatggagggccccatccaagggcacaggaccgaggggaggag  
agaaacgaggctggcaggcagtgccatagactccgcttgcggagctgtggggaagtagc  
tctgcaggctgttggcttcttgcctttcagaagcaggtggaaggtccttctcccaaga  
gaggcagagctgctgaggagctgcaggaatgctccatctgtcccatagtgttaatgtc  
acttcagcctcagagctagatgggcggcctacccttcccttccactcccgtggctcc  
tgtccctggcaggccaggcctagtgaagaccccaagaaggcagcaccttctctgtc  
tttgcaatgtgggatctgatgggtccaagagtcccaacccatgggaggagcgggtgcta  
gtcctgtctggctgaggggtgccttgcagggccctgcag

>IGR1048a

atggggcgccctacccttcccttccactcccgtggctcctgtgccctggcaggccagg  
gcctagtgaagaccccaagaaggcagcaccttctctgtctttgcaatgtgggatctg  
atgggtccaagagtgcacaacccatgggaggagcgggtgctagtctgtctggtgagggg  
ctgccttgcagggccctgcagacccccacctctctccgagaggccggctccccaggg  
aggacttaggctggctgaggggtgctgggtgctgtccagccgggggatgctgcaaccag  
gtctctcactggcctgtctcgggtccacatcctccatggagcagacatcacgttcatgtt  
cttttgccttttaaaatgaaatttatccttgcctccattggaaaatgaatgcatgct  
cattatagaaaaatgtgggaaacagatcagaagaaagaagagtaataaaaaattgccttt  
ccaatgtggcatcaccacagctccttggcacaggccctgggctgggcaggaggtgtg  
gactgtgngccaacaggccatcgggctgtgggtctacaggggatgccatcgggtggcttg  
ggccttccctccttgagggttggggaatggtgtccagccccgcacagttgtccacag  
tgatgcagagagtggagctgacgagagttgctatattaa

>IGR1049a

gctcctctggcacagggccctgggctgggcaggaggtgtggactgtgngccaacaggc  
catcgggctgtgggtctacaggggatgccatcgggtggcttgggccttcccttggagg  
tttggggaatggtgtccagccccgcacagttgtccacagtgtgcagagagtggagct  
gacgagagttgctatatttaatttgggtgcctgcgtcacctctgaccacacagcagctc  
tgcccaggcaggcagcacatggctgggggtgtttctgaacgacgctgtgagagaatcact  
ttcccaagaaaaggatagcagagggggaaggagagacagcaacagaaagtgaggtcgt  
aagtagaaaattgcttctgggatttcaaatggcttgcctgctggggccctccctnctgcc  
gagaaatcagttgatctgggaaagtgttgcaaaccttgccttctgttttgggtgg

agctgagaaatgaatgaagataatggggctttatgagtgtgggggagggtagctgaggag  
acagccaccagtcctgacccagcttgacccctagaaaggccagataggagctggccag  
tgtgtccctggccaggctgtcctgtctggaacatagtcagcctgnccccagccggacctt  
cttagaaggaggagcaggcgaagtgggaaacaggtttggag

>IGR1050a

ataatggggctttatgagtgtgggggagggtagctgaggagacagccaccagtcctgacc  
ccagcttgacccctagaaaggccagataggagctggccagtgtgtccctggccaggctg  
tcctgtctggaacatagtcagcctgnccccagccggaccttcttagaaggaggcaggcg  
aagtgggaaacaggtttggagtgtgtacaatgcaccagctagatgaaggcataggcag  
aagacatttctcttgaccctaataaaaaagcgataagccgctggggccaggtgaaggcca  
ggcttcaagctgctgcctcggtcacaaggaaataagatgcgggctgtgtcccttggggc  
ctgctccttctcgtcctgcgcaggacagggggccagcctcggagaaacctgccaagtac  
tgggagcattttctgacacctcatctgagcagcaaactgaggtgtttggtgccgagtca  
ccggaacctcgcgtgtgtctcacttctcactcaagcccagcctctctccagtgaacct  
cctgggctgggggttcccagggtgccaagggtctcccgccttggggcccatggccagcat  
cttctcccactcaccagcactcttctcccttctcaaccccttctctctgagtcctgc  
tgagggttgccttgtttatgaaagaacttaggccacgtg

>IGR1051a

tcacttctcactcaagcccagcctctcttccagtgaacctcctgggctgggggttcccga  
ggtgccaaagggtctcccgccttggggcccatggccagcatcttctcccactcaccaag  
cacttcttctcccttctcaaccccttctctctgagtcctgctgagggttgccttgttta  
tgaaagaacttaggccacgtggttagagaaaactcccagcaaacaccaccagggtcagt  
ccccaggaggagggttcccagccacagttgcagtgtgacacttacctaccttgttctg  
tcttcttctcattctgacaggggcccttccctgtcggccaccagctgcagcttggttc  
tgtggctcagtaagggtgtcactcatcctggagagccccacgcctctccagcccagggc  
aactgccagtaccacaggtcccccttctggggagcagcctggaagggtgtgagggaca  
ggagctcggcgttggctgaggaagtggcgagctgcagaccctagtggggcccgaggcgg  
ccatccgactgtgcacctgcctgcaggctgtcctgaatgtgtggctcagagcacggcc  
ttggaggatcccaggaaccttggccacatcagcctcaattccagctttgttcttgag  
ggagtcacgtggaatttactggaagggttccatcttct

>IGR1052a

ggaagtggcgagctgcagaccctagtggggcccgaggccatccgcactgtgcacct  
gcctcgcaggctgtcctgaatgtgtggctcagagcacggccttggaggatcccagggaac  
cttggcccatcagcctcaattccagcttctgttcttgaggagtcacgtggaatttca  
ctggaagggttccatcttctggataggcagggcaatacttggctgggcagagaggac  
atgggtcaaagatgatgtactgggagatagatttctaggtcttgtttacaaagtcatta  
ccctccgtaaatatccttccagccttaaaccttaggctctggatggagaagaatgccag  
acctgactcccacccacctccccctggcttccaagactctctctccttgcggaagcag  
ccactgtcacctccagaggggaggccctcccaggaggagacatacagctccccaaccc  
gacctctgttgttctacagagttcttcaggggctaaatcttgagtgcattgtgtgtc  
ttggtgtcactagcccagggtgtctgtgtgggtgtgtccccgcaggtatttctcagc  
aaacgtggcaggacttaataaggcttggcaccagagagccggtcctgtctcctgccggga

cagcctgctggagaccagctcttgaccatcacctctt

>IGR1053a

agagttctttcaggggctaaatcttgagtgcattggtgtcttggtgtcactagcccag  
gtgtctgctgtgggtgggtccccgcaggtatttctcagcaaacgtggcaggactta  
aggcttggcaccagagagccggctctctcctgccgggacagcctgctggagaccag  
ctcttgaccatcacctcttcaccccacagtctctctctctaggccaagtgtccc  
tggccccctgcactgtcaggtttgccttctccgtcgcctctccctggggaaagtgtg  
ttctggagtagctggccaccatcatcagccccctggcgaactcctgccacgtctctgc  
tgttgcgtgaatgacacagccatgagcagtcgagggcggctgncttcagggacttctgag  
catcactgtgtgttcccatagggtcttggtctcccaggaggggcacctgcctgtcact  
acaagtgtgagactgtgttctgaagaccatcacccactgcaaaggcatccatcctggag  
tcacctctgcctgggcacctcccagagagtcacagtgaaggtgtgtgacgggcat  
ggcttgagctgtggttggttaaggcccgtgtctctgcactccagctgctgaccaggg  
ccatggggaagcaacaagagctgctgaggagtggcctagc

>IGR1054a

ttgaagaccatcacccactgcaaaggcatccatcctggagtcaccctctgccttgggca  
ctcccagagagtcacagtgaaggtgtgtgacgggcatggcctggagctgtggttg  
gtaaggcccgtggtctctgcactccagctgctgaccagggccatggggaagcaacaaga  
gctgctgaggagtggcctagccagagccctgttcacagaggtggtgcgtgtgtgcacct  
aatggcgagagctgtccagaaatgcaatgggctgccccctaaatataggtaggacgtgc  
ctgtcagtgtgagggggcccgaacaggttgatgacagttgtacagggggaaaaactccattc  
aggacaggtgacatttgganagaaataggnagggtggttaagtgtgtgggctttggagt  
aaagtgaattttggaccccaatccaactttgctcctttacctcagatgaggctctgagg  
ccccaggacccacgtgaggaagtagctacgtgaccttaggcaaacgccacgctttctg  
agcctcacagttctcatcgccctcctgggttgtagggagacatggatgtgtgggtggtg  
ccagacacagctggccagctcctcaggagatgtattgtgagacttctgggtctccgtct  
gctcctgatgccctccttgaacctgacagcttggtggccaa

>IGR1055a

aagtagctacgtgaccttaggcaaacgccacgctttctgagcctcacagttctcatcg  
gcctcctgggtgtgaggagacatggatgtgtgggtggtgccagacacagctggccagt  
cctcaggagatgtattgtgagacttctgggtctccgtctgctcctgatgccctccttg  
aacctgacagctctggccaaagcctctccgtccttgcctggtgcagcagacagaaggtggg  
gttctcttcaggccatgtccccacctcgggagctagcttgcatcagcccaggtcactg  
cacctaccctcgtgtaatccatcccagtcctcctccaacccaccagcctcccgaag  
agctcctcagagctctcagaccacagaccagtgtcccaaaggccaaaatgaaagacaaa  
tacaatcaggcctatctgtcaccaactttatttctggcttcagtttgatagtcattgaaa  
caactgttcaatgtccccccccaggtgtcaaggtacccttctatatattaactcttt  
gtaacataatftaataatfaacnaggaaaaacaataaattactcgttggctgagagc  
tggtgtgtggtggcagacaggagcggctgttctgccccctcctgacctgcctcgat  
gaggtccgaggccccaggacccacgtgaggtagcagaat

>IGR1056a



tccccagtggtcaaggtagcccttctatatattaactctttgctaacaatatttaattt  
aaatacnaggaaaaacaataaattactcgttggctgagagctggctgctggctggcagac  
aggagcggctgttctgccctctcctgacctgcctcgatgaggctccgaggccccagg  
acccagtgaggtagcagaattctgtacacagtactattaccagggactcctggngtnc  
actgctttagtgtgnggncctgagtcctgaaccttggctccaagtgcnaagcagccac  
agcttccccaatcccaacgggtgacaaacacactcatttaataacacacaataataaa  
taagaccaagaagaagtgtgcctgagctgctgtctgcctcagttgcctgtgtgtgaagt  
ggtccctgtcccaccacatgtctggcaagggggcancactgtaatgctacagtgtgct  
ctagggcaggggagggtgtagggacatgtcatcctgggtccaccgagctcagggccct  
ggacagaggaggccaccaggctgagccctgggcaaggggaaggctgaggtcggctaggc  
tgaanacgggcagcacaggctgaggtctaagctaaggaattttacccctccctaaccctc  
cttcccgcctacccaagacattttgacatcagaaagaaa

>IGR1057a

tagggacatgtcatcctgggtccaccgagctcagggccctggacagaggaggccacca  
ggctgagccctgggcaaggggaaggctgaggtcggctaggtgaaanacgggcagcacagg  
ctgaggtctaagctaaggaattttacccctccctaaccctccttcccgcctacccaagac  
atthttgacatcagaaagaaaaatgaatctgcaactcaatagtcaggtcctgtctctgc  
aaataatgatgtttcgaagtttcagttgaacngtccctcgcgaaaaagtthtttaaat  
gtaagagcaggtcctttacaaactggggccacctgattttggtgtctcganagcaagc  
tggaaaactgtgcaggacaaagggtcagcacntgagtagaannccagaggccgggacg  
actcgcacaaaccaggggctttccagggactgtctcattcagtcctcacggaagtcccca  
tgaggtgggtactgttagtacctctactgtacagatgtggaaattgaggccaggtagga  
gttaggagcccttgagccagatcctgtaaatcccgaaggccacgtccctgctgccacaa  
tgccccaccctgggtgnacacacaccatggatattcagccagcttcccttcagcgagc  
ccagggttggcaggaggggggtgcagggtgggtgtgagagg

>IGR1058a

acctctactgtacagatgtggaaattgaggccaggtaggagttaggagcccttgagccc  
agatcctgtaaatcccgaaggccacgtccctgctgccacaatggccccaccctgggtgn  
acacacaccatggatattcagccagcttcccttcagcgagccaggggtggcaggagggg  
gtgcagggtgggtgtgagagggtgggggatgccttaccacagctgagacctgtgcgggc  
agaatccgctcagcatcctctgggtcttctcgatggcactgcagcctgacacgttgatca  
gggattccagggtgcacagtactgtggggaggggacaccgagggtcaggccctgcttg  
ggcagctgccttttgtgagtcgtcaggaagatggggctgagatgcctggcgaggtgagt  
ctgggtgtgggcgggaaggggagattatggcgaggaggaggagancactgaaagctt  
gcttggaaacccagccatggaaggaggtcagagaagataagcccaaggcctggagcct  
ctgccccatcctccctgcaccaaaggtccttaccatgccagctgtcaggtgatgtcc  
ataccatgctgccattgcagagcggancctnntgggagcaagtacagtgagcagagt  
ctggcaggggtgtgggcctgccctggcagccaggccag

>IGR1059a

gaaggaggctcagagaagataagcccaaggcctggagcctctgccccatcctccctgca  
cccaaaggctccttaccatgccagctgtcaggttgatgctccatccatgctgccattgca  
gagcggancctnntgggagcaagtacagtgagcagagtgtggcaggggtgtgggcc

tgccctggcagcccaggccaggtctgccccagcacaggncccacaagcatccctggtgtg  
gcacagaggcaggcctggcanccctcancattcctgagcttcgtttctgcttgaaca  
gcangcataggggtgaggtcccactgtttagggtcttgagctgagagaaaaaattgac  
accactagtaagggacaagctgcatgcaaggcttgccatagtcagggcaggaggacaggg  
gcctgcgggaaggccagggtggggacgagtgaagtaggagtgccctgggccactgttga  
ccaagacaaatcagatgggagggcgtggggatctggtgtattaaatgccctgccttctga  
tggtgagggaaactgcagttaggagcatggacactctggtgtggccaggcctggcttg  
aatccagcctctgtcacttaacctcactgaaccttagcagaatgggttcacgtacctgc  
ctcttgaggtggctggcagtgatgaaatgacacataaagc

>IGR1060a

aggcgggtggggatctggtgtattaaatgccctgccttctgatggtgagggaaactgcag  
ttaggagcatggacactctggtgtggccaggcctggcttgatccagcctctgtcactt  
aacctcactgaaccttagcagaatgggttcacgtacctgcctcttgaggtggctggcag  
tgatgaaatgacacataaagcacgtgcaccaggcctggtgtaagcagtgctcagacatgt  
gagctgttactagtggggcaaggagcggactctactaaggaatcctctgtaaggcgagg  
cctatgatggtgctggggagaatggctgcattgttatggcctcctcagttggcctga  
ccacatggttctgggaggggtgctggcccttctctgctgtcctctgttcaggaatggctga  
gtaggagctggcagtgccagacaaggccaggccaggagcaggtagtcctggggagtc  
tgccagacacctccataggtccatccacagtgtgagccccccagccagctcctctc  
cctcatggctgggcccggccttggtccatggagattttcctgacctacaggcatcttag  
gaccaggcccagcctgtcatgacctcatcttggaatcaccacccctggagccctcata  
gctaggacctggctagccgacactcaccttctggttctg

>IGR1061a

tccatccacagtgtgagccccccagcccagctcctctcctccatggctgggcccgggc  
cttggtccatggagattttcctgacctacaggcatcttaggaccaggcccagcctgtc  
atgacctcatcttggaatcaccacccctggagccctcatagctaggacctggctagcc  
gacactcaccttctggttctgggtgatgtgaccagctcctcaatgagctccctgagggc  
tgtagagggagggcacaggcctggggaggcgaagccgcaaggcaagtgagagcaatgac  
cgtgggtcaaaaaagcccatgaggccagtgccaacaggagaggattgaggagcggatg  
cnnangctgggtggctgtggccttggcgtcttggtgcagctttataggcccaagtgtg  
gacgcctgacacctggtctctgcttttcaggcactatctagaaccacatctttactc  
atcttgattttactttgtgaaaaatccagtgtgcataaaggaaagagtttgatttctca  
tggacttattgagaagggtccagggcagagttccaagatctgggtgggtttaattccag  
cggcaggcaaggggccctgagagcggcgtggcatttgcaatgctgccctgagttccagca  
gttttgctgtgacaacctgagtaacctggacagctgacc

>IGR1062a

gaaaatccagtgtgcataaaggaaagagtttgatttctcatggacttattgagaagggt  
ccagggcagagttccaagatctgggtgggtttaattccagcggcaggcaaggggccctg  
agagcggcgtggcatttgcaatgctgccctgagttccagcagttttgcctgtgacaacct  
tgagtacctggacagctgaccaactctgagctcctgtcctcagaccttttgggtcacc  
agaagtgtgagcagatagcttagtgactgtggctgtgaccacagtctaccagctatg  
ggaatttggggagtttttttcgatgaaccagtccttaataacttaagtaacact

tgcttgatacaaaattcaaacaggcaatagaagagtaaagttcacttcttttggttgc  
ctaattcctccttggtccctgtgagagggttgc aaagttcagattccagggtccc  
actgagagatccagaaagattcagaggctttctgggagctttttggttttttgtt  
ttgtttgtttgttttttgagatggggtctcactatgttcctgcctaggctggcct  
ccaactcccagactcaagc gatccccccacctcagcttcagagtggctggaagtagtgt  
gcacgtgtctggccccctttaatttaaagtgatgggcat

>IGR1063a

ttcagaggctttctgggagctttttggtgtttttgtttgtttgtttgtttt  
tggagatggggtctcactatgttcctgcctaggctggcctccaactcccagactcaagc  
galccccccacctcagcttcagagtggctggaagtagtgtgcacgtgtctggccccctt  
aatftaaagtgtatgggcatccttctgggaaactcttaactgggccaggctggcagcct  
tagtccagggtcagagantgtnnnnnntnctagtncactggggcttggggtgatccctt  
gtcaccagtctctgcaggatcaaccctgccgtctgggggctcaaatctccttctgc  
agaatgagtgtgtggaggggcgtcctgggcttggccccctgcagccatgtcgcctttc  
ctgctcttccctentttctagaagctcctcagaaacccccacagcagaggccacggca  
tttgctgttgggtgttgatgtcaagatttctccccctacccacttctccccgaaccagc  
gcctccccaggccccctctgtcctgtcaggtccctccgtcctgtcctcgtatggggct  
caacctctcacaagggtgtgtgtgacctctcacaaggcatgctggattcccgtc  
agaggcatcccaggcttggccaccctctcttccacagg

>IGR1064a

tgtcaagatttctccccctacccacttctccccgaaccagcgcctccccaggccccctt  
ctgcctgctcaggctccctccgtcctgtcctcgtatggggctcaacctctcacaagggtg  
tgctgtgacctctcacaaggcatgctggattcccgtcagaggcatcccaggcttgc  
ccacctctcttccacagggaacgtatccaccctctctgtccacactcgaagctt  
ccagcccagctgttggtctgactcccagaagtctgccccctccccctcagaggccccag  
tgctggagtgcgctacttggcgtgtgacctcctacgggctgtttcctaattctgta  
gtagaggggccacggcatctccacagggtctccgtgatgggggaaggagcggggaacta  
ccttggtctgtgcaactcccggagccccggcggtgagtcaacggcccttatccccat  
ggccacaaaagccctgccgggagcgggtgggcaggggccccccgcgcgtgggagaaggc  
gctggcgcgggcggttggcgggcgatggccgcggagataggggggtggccttatgtaac  
gggagatgggcccataagcgggatctgcgcggcgggccctcctccgcgcctccggcg  
gtggcggtccgggaggcaggggtggcgcgagaccggc

>IGR1065a

gggagcgggtgggcagggggcggccccgcgcgtgggagaaggcgtggcgcgggcggttgcgg  
cggcgatggcccgcggagatagggggggtggccttatgtaacgggagatgggcccataag  
cgggatctgcgcggcgggccctcctccgcggcctccggcggtggccgggtccgggagga  
ggggtggcgcgagaccggccagcttgaagctgcggaggctggcgagggggcgggcaaa  
ggtggcggtccgagcgccaggcagggcaaggcggtggacacccgggcccagcggtcc  
ccgagcgccggtgcgacccggcgagggggcgggagcgggcgagggggcgagcgcgacgt  
gccgtccagcaccggccatgtcaggccgagggaccccgggggcccgagcgggcagc  
ccctgccctggagggtgtctccagggaaccaaggcgtggcgggcggtgcggagaggcgcg  
gcacagatggctacatcagagggtctgtgtctgttctagattgtcagcggggatccac

tcccgtagcgggtaattttaataactaactaccaaagggccgctccgggcacttggcg  
catgtggctcgacactgcctgcaatgcgctgcgtgggcccgccttatggccatgggga  
gcctcttcgctttgctctggccccgaagcgtgggattgg

>IGR1066a

agggtctgttgcctgtttctagattgtcagcggggatccactcccgtgcgggtaatttta  
attaacactaactaccaaagggccgctccgggcacttggcgcatgtggctcgacactgcc  
tgcaatgcgctgcgtgggcccgccttatggccatggggagcctcttcgctttgctctg  
gccccgaagcgtgggattgggacctcccttctcccgaccagctcatctgggaaagct  
ggggttgccttttcgggtttctctggactctgggtctccgttggcaaagacatgatgcc  
agtcaggaggagtaaggcctgagagagttgttttgaagtgaaggatttaattttta  
gatttttatttttaggaaagttacgaatgcagataattttaaaatcaagaaggctgatt  
atgtaaacggcgagcgtgggaatccgtgctctatgggcctctggcattgctgctcctt  
tgtgagtgaggcacttactgcctgctgtgtccctactgtcttttaagggtgtttata  
ggccgggcgcggtgggtcacgcctgtaatcccagcactttgggaggccgagatgggcgga  
tcacgaggtcaggagattgagaccatcctggctaacacggtgaaaccccgtctctactaa  
aaatacaaaaaaattagccgggcgtgggtgggtgggcgcctg

>IGR1067a

gccctgctgtgtccctactgtcttttaagggtgtttataggccgggcgcggtggctca  
cgctgtaatcccagcactttgggaggccgagatgggcggatcacgaggtcaggagattg  
agaccatcctggctaacacggtgaaaccccgtctctactaaaaatacaaaaaaattagcc  
gggctgtgtgtgggcgccgtgtagctccagctacccaggaggctgaggcaggagaatggc  
gtgaacccgggaggcgagcttgagtgagccgaaatcgccactgcactaagcctgg  
gagacagtgtgagactccgtcttaaaaaaaaaaaaaaaaaaaaaaagggtgttaagaa  
aatcacaaggaaggaggaaaaaatatatttcctattcattaagtggagggtgaacatcac  
aaaggctctcagcgtcactgtcttcacgttgagcaggccgaggaggaagaaggaggagg  
tcggctctgtcatctcagggtggcagaggcaggagagaatccgtggataagtggatctg  
tgagttcagaacctgctgtcaagggtcaactgtgtatgtaaaaaattcagtggaatct  
ccacctccctcacaagtaactattttcttaggtgtgttttttttttttttggatc  
ctattagtttatgtaatacaagcaactgtgaatatatgg

>IGR1068a

ggtggcagaggcaggagagaatccgtggataagtggatctgtcagttcagaacctgctg  
ttcaagggtcaactgtgtatgtaaaaaattcagtggaatctccacctccctcacaagta  
actatttttcttaggtgtgttttttttttttttggatcctattagtttatgtaata  
caagcaactgtgaatataatggcttattttccctgtccctacatgtgaagtggcatcat  
atacacctttgcacctgtttttctcacttactataaaaaataatattttgtattca  
cacttagattgggacattttatgacttttctcttgttctctcttattggaactgceat  
tttttgactatatacctcttggacttgcctttaattttcttttattctattttcca  
tttaaaaaatttctctctctgggatattctcatagctttatcttctgagggtatttga  
ttctttgtgtgtgtgctgcatgtgcacatgcacgctaacagcactatgttctgtttca  
ttgatatcttcaagtttcttttcatataatctttattttctgcaagttttctta  
aaaaattgtttgactgggcgcggtgggtcacccctgtaattccagcactttgggggggc  
cgatcgcttgagcccaggagttgacaccagcctgggaaa

## &gt;IGR1069a

catgtgcacatgcacgctaacagcactatgttcttggttcattgatatcttctaagtttc  
ctttttcatacataatctttatcttctgcaagttttcttataaaaaattgtttgaactgg  
gcgcgggtggctcacccctgtaattccagcactttggggggccgatcgcttgagcccagga  
gtttgacaccagcctgggaacatagggagactttacttctacaaaacataaaaaaact  
tagccaggcatggttgatcacctgtgatccagctacttgggaggtgtgtgggagca  
tcaactgagctcaggagtcgaagctgcagtgcagttgtgatcacaccacttcaactccagcc  
tgggtgacagagccagaccctgcctcaaaaaaattttttccatcttatagccttcc  
ttgcacgttaggtaactcctggattgcctgcacatgttaaacagggatctctgagggtaa  
ttgtgtgggagggggctgttcttatagggcaggtgggtgactgtttcacttggggaac  
ctcctgtggcagtttcttgcgttttttggcaggcaggtcagctcgcgcagaaaagat  
tctccctgtctccagcattccagcagcaagggtggagagagggtgggggtgggggcctca  
gcatctgttgactgttcctgatttcagcatatttcgaccg

## &gt;IGR1070a

ttcctatagggcaggtggctgactgtttcacttggggaacctcctgtggcagtttctt  
gtcgttttttggcaggcaggtcagctcgcgcagaaaagattctccctgtctccagcatt  
ccagcagcaagggtggagagaggggtgggggtgggggcctcagcatctgttgactgttct  
gatttcagcatatttcgaccgccctctactgtgtctagtgttcttgggtccagatatcct  
atccggagaaaaacctgctgcaggagagtcactcgaacttgatgaacaaaaatggatc  
taactgtttcttaactgagttcaacaacttcttattttaccaccttctcttctga  
tgtccttggtcttctcccagttcctgagcattcttgggattctgtaaatcaacataggtc  
tcagctggccttaggattcagttttcttgggtcagccaagtagtctgccaccgtccctcc  
acttccacctttcaaacgctggtgctgcacatttctccattttggtgggtttaa  
actttagaaaattcagttactgtcattttagtgtgtataaagtgggagttgtgtttat  
tccattgtttcatttggaatttatatttttaatgtagagaattataaacaagacaaga  
aataaggaggcaaacactagtccttgcaccccttttccctgg

## &gt;IGR1071a

ctggtgctgtcatccatttctccattttgggtgggtttaaaactttagaaaattcagtta  
ctgtcatttttagttggttataaagtgggagtttgtgtttattccattgtttcatttga  
atttatattttatgtagagaatttataaacaagacaagaaataagaggcaaacactag  
tcttgcacccctttccctggcactataacacctctgtatcttgcctatgcacattaca  
ttttgttagaaaaatgagataatacattatagttttactccttttcaacttaaata  
tatgaagagcatttccaatgtcagtttctgcatttaaaaaagattacacaaaatgtt  
attgtgtaaaagtacagatatgcaaaaaataaaaagcccatagtcacagcatccagaga  
taataatcattgtaatttttgggtatctgtcatgctagtagtggtgatgtacagggtaa  
gtaccttattcctaaaaataaaagggaataactttttcttttctttttttttttt  
gagacagagccttgcctctgcacctacgttggagtgcagtggcaccatcttggctcactg  
caacctctgcctctcaggcacaagcaatctccacctcagcctctgagtagctgagac  
tacaggtgagccaccacacctggctaattttgtatttt

## &gt;IGR1072a

aaagggaataacttttttcttttctttttttttttttttgagacagagccttgctctg  
tcacctacgttggagtgcagtggcaccatcttggctcactgcaacctctgcctctcaggc

acaagcaatcctcccacctcagcctcctgagtagctgagactacaggtgagccaccacac  
ctggctaattttgtattttttagagaccagggttcacatgttggccaggctggct  
catactcttgggctcaagcaatttgcctgccttgactcctgaagtgtaggattacagg  
tgtgagccactgtgcctggctgacataattttacttattagttttttgagatg  
gggtctcactctgacaccaggctgaggagcaatggtgcaaacacggctcactgcagtct  
caaaccctgggttcaagtatcctcccacctcagcttctgcgtagctgggactacagg  
gcaccatcatgcccacacacattggctgatttttaatttttttagagatagggtta  
aaccttttagacttaccacggtttactaataaccagatcaaagaggtgcaagataaatgtt  
tgccttttattgcttctctttataaattctctgcattaaaaatataaattccaagta  
aaaacaatggaatgaacataaactcccacttcataaccac

>IGR1073a

cattggctgatttttaattttttttagagatagggttaaacccttagacttaccacg  
gttttactaataaccagatcaaagaggtgcaagataaatgttgccttttattgcttct  
ctttataaattctctgcattaaaaatataaattccaagtaaaaacaatggaatgaacat  
aaactcccacttcataaccactcaaaccatagtagcaacaacctatcctgttggccagg  
ttggtcttgaactcctgtgctcaagtgateccttattcttggcctccagtgctggaa  
tcacaggcatcagccactgcacctggcctattacttaataatacattctgcgccaag  
ccccggaagacaataattacaataattccataacaatgataagttcataattcatt  
aagtaaatgtttattgagtgcttactgtgtaggtgctaaacaaacagcacagtctctgc  
cctcttagagatacattctagtggttagagataatgaacaaacacatgatataatgatg  
ttagaccgtgaaaagtacagtgaggagggaaaaaaagagggcaggtagaatgagtgagt  
acactattatataatgggatgggtgacgtaaggcatcactgagaaggtgttatttgagcaga  
gacctgaaggatgagagggaagtggccatgcagatatattgg

>IGR1074a

agtgggtagagataatgaacaaacacatgatataatgtagaccgtgaaaagtaca  
gtggagaggggaaaaaaagagggcaggtagaatgagtacactattatataatgggat  
ggtgacgtaaggcatcactgagaaggtgttatttgagcagagacctgaaggatgagagga  
agtgccatgcagatatitgggggaagaaattccaagctgaaggcacaaagtaagtgcaa  
aggcccttttctattttgtcatgctgctgtaacagaacacctaagactgagtaattta  
taaataataaaaaattattgcttacagttctggagggtgggaaatccaagatcaaggctc  
cagcagaattcgtgtctggtgagggtgctctctgctcccaagatggtgccttctgctg  
tgtcctcatgtggtagaagagccaaagggaagaactttctccctcaagccctttatgag  
gtcatgaatcccattcctcatggcctaatacacttttaagtgccccacttcttaatagc  
atcaccttggggattaagtccaatgtatgaattttggagggaacatacactcaacca  
tagtagcaccaaagcaggaaaatgccactgtgctgagaattagcaaggaaagccagaag  
gagtgaggggaggcatgggagaagatactgtcagagaagt

>IGR1075a

catggcctaatacacttttaagtccccacttcttaatagcatcaccttggggattaagt  
tccaatgtatgaattttggagggaacatacactcaaccatagtagcaccaaagcagga  
aaatgccactgtgctgagaattagcaaggaaagccagaaggagtgaggggagggcatggg  
agaagatactgtcagagaagtatgtccagagcatatggagactgttaagccattgagagg  
actgaggatttcatgatgagtacataggagccactggaggttttgagcagaggagtga

catgactcaatttacctttttcttttttaaaaaaattgaattaacgttatatttacg  
gaaaagatacaaaaatagtagacagagttcccatatcccctccacttaccagcttctcc  
caatggtaacacattacataatcatagtgcaatgatcaaaaacagaaaaatgagcatgga  
tttattaagtaaactggatcctattctaattcaccagtggttccattcacatcctttt  
cagttcaagatcaaccaggatctcacagtgcatgagtaattctcttggctcctg  
cagctgaatggctcctcagcttcttccataacgcttacatttccaggaatactga  
tgagttatgctgtcaaatgttcctcagtttgggtcccctg

## &gt;IGR1076a

cctattctaattcaccagtggttccattcacatccttttcagttcaagatcaacca  
ggatctcacagtgcatgagtaattctcttggctcctgcagctgaatgggtcctca  
gtcttgcttccataacgcttacatttccaggaatactgatgagttatgctgtcaaatg  
ttcctcagtttgggtcccctgggttttctcctaattgcactgaggttctacatttcac  
agagatgaagttggggccttctcactgcacaggtcacaggggtcatgaggtacatgcct  
tcttattgggtgatgttgacctgaccttggttaagatggttctgtcaggttcttcca  
tgataaaattactatcttccccttttagttaatatattgggaaagatagttgagatta  
tataaatttttctcagatttggcctactaataattagcttcatcagtgactcttctctg  
aaatgatttttattgtggtattgcctagtgtgacttttcttttccccttctctac  
atttattactgttaattctactataaagaagtgtgtcctgtccctcatttttttaa  
gtaagtactgtgtatagccacataagttcatgaatatttttactctatcggttata  
atccaatactgtctttattttgttctcaaatgttctac

## &gt;IGR1077a

attgcctagtgtgacttttcttttccccttctctacatttattactgttaattct  
actataaagaagtgtgtcctgtccctcatttttttaagtaagtactgtgtatagc  
cacataagttcatgaatatttttactctatcggtataatccaactgtctttatt  
ttgtttctcaaattgttctacctttgatcattgggagttacttcaggttgggtctgtgt  
tcttgaacaaactctaccttttttttaaaaaaatatttcttaatttctggcaccac  
aaaaaattctaggtcattttgtatttccctgcctcagccctgaagcaaccacttcac  
caaggagccagagttcttttattgaagagcgtgttttaaatcgagatcttgaagtag  
gtgtcctcatttactgggtgtcatcacactgggcctctttaaataactttgttact  
ttcactataagtttcttatttcttagtggttacctggggattacaaatgaacacct  
taatttagatgaatgtcaacttaattccatttcaaaagtccctatatagtctgttgcc  
tctctctttgtagcattattgtcatataaattatattttatacattataagcccatca  
acagtggttaaaattcttaatgcagttcccttcaatcatg

## &gt;IGR1078a

atttcttagtggttaccctggggattacaaatgaacaccttaatttagatgaatgtcaa  
cttaatttccatttcaaaagtccctatatagtctgttgctctctctttttagcatta  
ttgtcatataaattatattttatatacattataagcccatcaacagtggttaaaattcttaa  
tgcagttcccttcaatcatgtaggaaaagagttacaacccaaaatactttttttttt  
tttgagaccgagtttctctgtcaccaggtggagtgagtggtgatctcagctc  
accgcaacctccgcctcctgggttcaagagatttctcctgcctcagcctcctgagtagctg  
ggattacaggcgcccaccacaacgcctggctgattttttagtttttagtagagacaggg  
ttccacctgttgggcaggtgtgtctcaaacctcctgacctcaggtgatccgccacctcg

gcctctcaaagtgttgggattacaggecatgagccactgtcccagccccaaaatacatt  
tatacttttatattacatatatttacccttaccagtactctttatttgagtattcatg  
agcatttgagctagtttcattttaccctaaaggattcattctccttttatattcttgt  
agggcaagtctggtgaagacagattatcacaatgtttgt

>IGR1079a

ttacaggecatgagccactgtcccagccccaaaatacatttatatttattaccta  
tatactttacccttaccagtactctttatttgagtattcatgagcatttgagtctagtctt  
attttaccctaaaggattcattctccttttatattctttagggcaagtctggtgaaga  
cagattatcacaatgtttgttatatgggagtgcttcattcttgttttgaaggacag  
ttttctggatacagaattcttgattgaggctgggcacagtagccacacctaatacca  
gcatttgggaggccaaggtgggaggactgcttaagactaggagttaagaccagcctgg  
gcaagacagcaagacccctgtctcttaaaaaatttttttttgagtgtggtggcacat  
gttggtagtcttatttgagaggctgaggaagagaattgcttgagcccaggagtgaag  
ctacagtgagctatgattgcaccactgcaaaaataattcttggtgatagctttttcat  
tcagcatttgaatatgtcatctcactgcttcaggcctgcattgtttcttaagagaagt  
cattcttagcttactgtctcttctgttgagatctcttttcaacaatttgaccatg  
atgcactaaatgtgaatccctttagtftaccctacttg

>IGR1080a

caccactgcaaaaataattcttggtgatagctttttcattcagcactttgaatatgtc  
atctcactgtttcaggcctgcattgtttcttaagagaagtcactcttagctttacttg  
cttcttctgtttgagatctcttttcaacaatttgaccatgatgcactaaatgtgaatc  
ccttgagtttaccctacttggagtttgtcaattcttgatacgaagattaatgttt  
cataaaatttgggaagtttgggctactatttctcaaatagcttttctgtcctttctc  
tctctctcttctgggattctcattatgattggtatacttggcattttggtacacttga  
tagtctcctcaaaggtctctgaagctctctcattttctcattctctgtctattctc  
agactgtataatctcaattgaccggtcttgaactcactgattcttctctgccagttc  
aaatttgctgttgacccccatctagtgaattttatttccattactgtatttctcaactc  
cagaatatctatttgattctttttataatgtttgtctcctactgatagctctgataat  
ttggtgaacatcattctcataatttctttaaattcttagacttgtttctgttagttc  
cttgaacatgtttataatagctgatactaaagtctttgc

>IGR1081a

atctagtgaattttatttccattactgtatttctcaactccagaatatctatttgattc  
tttttataatgtttgtctcctactgatagctctgataatttggtgaacatcattctc  
ataatttcccttaattcttttagacttgtttctgttagttccttgaacatgtttataata  
gclgatatctaaagtccttgcctagtaagtctaactctgggcttctcatagattgttt  
ctattgactgtttttaaattgctgtttatggcatgggtcagatgttctgttctttgtg  
tgtctgtttttaaactctatcaattattgaagtcagattacctactctccagggttg  
cacctgttactatttctattgttgcctgtgttgggttctgtcttctcctggacta  
attctgcaaattctatatgctttgtcatgtttgggtcctgaagctctactcagcctagt  
gggtaagcgaataattggacagataatttcttctaatacccttgaaccaataaatttcta  
gcttttgcaagtgtgtcatgtgtgtattgtggagtcattgatgtgtcagc  
agacagttacaactgcctttatcttcatttctggcatgaattgagttcaaggctcagtc



agagatgagagcttaggacctctcaggacatgcatacat

>IGR1082a

cagatatttcttctaatagccttgaaccaataaattttctagcttttgcagtgtgtgc  
atgtgtgtgtatttggagtcattgatgtgtcagcagacagttacaactgcct  
ttatcttcatttctggcatgaattgagttcaaggtcagtcagagatgagagcttaggac  
cctctcaggacatgcatacatccctgcacatgcacatggacttctagattcccaggaata  
tgcttgagcttgc aaagctcccgtggacatcttctccagatttttccctttaagtt  
cttggtcagccttttgttagctccacctggtaacgctgcctcaggcagccacagggtaa  
tcagttgccactgattattctgcaggaagggtgtttcagagtgcagctctgagttagt  
caaataaagataggtcctgaaaatggagcttttcagtgcagttgccagacaagacaaatag  
aggcagttctctagtagtgagatctgggggacctccaaatctattctgtctcctccagt  
ggctactagggtgctgattttcacagatactaaagagggtgttggtttcaagttaccat  
ggattaagagagaagggtggttagggcaacttaaaatgccactttctgctctgaga  
ttcagctgttttcttaataaacacacctcagtttgctg

>IGR1083a

gagatctgggggacctccaaatctattctgtctcctccagtggctactagggtgctgatt  
ttcacagatactaaagagggtgttggtttcaagttaccatggattaagagagaagggca  
tgggattaggggcaacttaaaatgccactttctgctctgagattcagctgttttctttaa  
taaacacacctcagttgtcgtatccattagtttaattccaaagtctgaaaaagttga  
ttttgacattttgccagcttattgctttatgaagaagcagattttggatggcttta  
ctccaccttatggaagtagaaatccttttagatattaaaattataaattgtacagatcc  
tttgattcaatcaacaccaagggttcttttatggcctccttctgatatgcaaaca  
cctttttcaacagtgagaaactcagttcgtattatctacaacacaggtatgtattgtt  
tgacttttagtatgtacataaaaaatttcgaaattgctaaccacacacctgtgagaaacac  
attttctgagttacttttaaaaagatcactggctgctgtgttgagaactacagggagc  
aggcccaaatcagtgaggagcagttacgtggttactcagattattcaggttagagatggc  
agtggcttgaccagagcaatgatggtttagatcaggggt

>IGR1084a

aaaatttcgaaattgctaaccacacacctgtgagaaacacattttctgagttactttt  
taaaaagatcactggctgctgtgttgagaactacaggagcaggcccaaatcagtgga  
gcagttacgtggttactcagattattcaggttagagatggcagtggttgaccagagca  
atgatggtttagatcaggggtcccaacccccgggtgcagaccattacctgtcctcagc  
ctgttaggaacagagtcgcacaacaggaggtgagtgacaggtgagggagcattaccgcct  
gagctctacctcctatcagattggtggtggcattagattctcacgggagtgcaaactcta  
ttgtgaatttcacgtgagggatctaggttgcgtgctccttatgagaatctgactaatgc  
ctgatgatctgagatggaacagtttcatcccgaacctccccctcacccacccgtcca  
tggaataattgtctccactaaatcggctctgtgtgcccataatggttggggactgctgtt  
ttaaattggtgagcatggtcagattccgatgtttgaaaattgaaccatagattataaa  
ctgacgaattagatataagatgtaagataaagaatcaaggataatgccaattttgcctg  
agcaattggaataatggagttgccattaacagaagagatt

>IGR1085a

taaatcgggtctctgggtgccaaaatggtggggactgctggtttaaagggtgagcatggt  
cagattccggatgttttgaatgaaccatagattaaactgacgaattagatataag  
atgtaagataaagaatcaaggataatgccaattttgctgagcaattggaataatggag  
ttgccattaacagaagagattcaagttctgggagaaagactggttttggtcattttaagt  
ttagacgtttattagatattcaagtgcagatagatgccagttatccacaggcagctga  
atatatcagtcgaagcatttaggagagatctggattggacacaaacatttatgagttatca  
gtgtatagatgggtggtttaggagtggtcagtgccctgcctatatcctatgatcctagga  
actgccagtggtcctgccaaacttcagctgctgctgttttttttttttttttttt  
gtcttttagacagggtctcactctgccaccacccaggctggggtgcagtggcacaaat  
cacagctcactgcagcctgaaccctcagactccaggatcctatctcagccaagtagct  
gagactacaggtgtgcaccacatgccttgctaatttttaaaatttatgtaaagatg  
ggatgtcactatggtgctcagactttcttttaactgtg

>IGR1086a

cactctgccaccacccaggctggggtgcagtggcacaaatcacagtcactgcagcctt  
gaaccctcagactccaggatcctatctcagccaagtagctgagactacaggtgtgcacc  
accatgccttgctaatttttaaaatttatgtaaagatgggatgtcactatgttgctc  
agactttcttttaactgtggaagcagctgtgtcggtagacatggcaagccagtaact  
aacatgtgctagaatagcctcactcagtaaccctggcaagttgtatataaatactcca  
ggctcttggcccttaggtgggataattctgaggtatatatttgccaaactccccagag  
tctcctggggcaccaaaacttaattgccacttaccgtagctggcttaatagtaaactt  
ttcattggctgctttctttcatacacaatttccccaaatttctactgattactttcac  
gtgaagcattgtttacgctctgcttctgggagaacccaaactaagataatttaaagcta  
tgagactggatgagatcaccaataagtgagcacagagaagaaaagaggtgcagactctg  
agtactaaaacctgtgacattgaggggccagggaatgaggaggaaacagcaaaggaaac  
gggatgtgcaggtgtgcagggaggaggcagagctggatt

>IGR1087a

tctgcttctgggagaacccaaactaagataatttaaagctatgagactggatgagatcac  
caaataagtgagcacagagaagaaaagaggtgcagactctgagtactaaacctgtgaca  
ttgagggggccagggaatgaggaggaacagcaaaggaaacgggatgtgcaggtgttgca  
gggaggaggcagagctggattccagtagggctggggtgtcgggacagtttgagtacaa  
tgagtgagggtgacataatgatgagccatggaatttaagttgaataaggagagaagta  
caggcatcagggaacaacctgtgaaaaagccatagaatcaatggattgaaatctcagt  
gggtcaaagaattgctggggtgaggaccacaggaaaattgtagacaccatggggttatt  
ggagagtgagatgcttaaaactgagattttggaggggtgcagttattgtattaaaagga  
cggggctctagaataagaccatagaactgagtatcttctcactggaggaaacaaaaagg  
gctgagggaggccaaggtaggcagatcactgagggcagacgttcaagaccagcctggcc  
aacaaggcgaaacctgtcttactaaaaatacaaaaattagcctggtgtggtgtacatg  
cctgtaatcctagctacttgggaggctgaggcaggaggat

>IGR1088a

calagaactgagtatcttctcactggaggaaacaaaaaggggtgagggaggccaaggt  
ggcagatcacttgaggccagacgttcaagaccagcctggccaacaaggcgaacctgtc  
tctactaaaaatacaaaaattagcctggtgtggtgtacatgcctgtaatcctagctactt

gggaggctgaggcaggaggattgctgtatcagggaggcagaggtgcagtgagctgaga  
tggtgccattgactccagcctgggtgacagagcaagactccacctcaaaaaataaaaaa  
gactgagaggccaaggagttgtattagaccatcacttgatattgaaatcagcaatgatt  
attagtaatggggtgacactgaaccgggagctaaactctcaacaataagaggagtgga  
ccaagctgggaatgaaagataactgcaacaagagtgaatgaagacagcttttcttgaa  
cacttacacagtatttagtggtggcaagcagttctaagcagtttgtaaataatgtcatt  
caatcttcataacaaccctacaaaatgtaccattttaccacttttacatataaggaa  
acagaaaacaggacaaataactgctcaaggtcccagctagtgagtgggtgtgctaggat  
ttgagcccaggcagctctggctcattctaacctccatccat

>IGR1089a

aggtggcaagcagttctaagcagtttgtaaataatgtcattcaatcttcataacaaccct  
acaaaatatgtaccattttaccacttttacatataaggaaacagaaaacaggacaaata  
acttgcctcaaggtccccagctagtgtggtgtgctaggatttgagcccaggcagctctgg  
ctcattctaacctccatccatgctgtgatggctattcattccaatgtggggaagggggat  
atttggaactgatctagaagcagcaatgagaagccagaaaggcacctatcccacctcca  
aaccatgggcttcttggaatgaaagcagccactctcagaagtgtccaaggatgccac  
atattcagggggaaccagatttaaaattgggaagtctgtttaacttgcaaatgatact  
ttgtttcactgcctatatgtatgctgtattgcctttgttattcttgcgcaacaacta  
gcactttcattaacatgttgatagaaggtaactggctttaatattactgagaaatgttt  
tatttgcagttaagatgactgtttaatttgatttagcaacagataacattaagaaaat  
attattgcaaaactgtgagttgctaaagctaggagatgttgaaatttatcaaatatag  
ctgctagantttttcagaattttttcaccttcgggttt

>IGR1090a

galagaaggtaactggctttaatatttactgagaaatgtttatttgcagttaagatga  
ctgtttaattttagtttagcaacagataacattaagaaaatattattgcaaaactgtga  
gtttgctaaagctaggagatgttgaaatttatcaaatatagctgctagantttttcaga  
attttttcaccttcggttttattatagtgatggatttatcaacagattttcattttct  
gaaatctgcattcttgggataaaaatatcttgggtattgtggatgtttaatatatgact  
agaattgatttgcctttaatcttactcgtgattacatttaggacccccccccaccacc  
accacccccaggatactctgtcttaaggctccttagctttaatcacatctgcaaagttcc  
tttgcgtataaaagtaacagtcacgggtctagaatcaggacctgtctatcttggggg  
ccaaccatttaacctagcacagatagatgccttaggaccttagggcttaattctctctg  
gaccagttgagaaaagctgtctaggcaaacatgctcattatagctacagatggcacaaa  
accatgccatgtgactgaatcaagacccggtatggctcctggctgactctgaatgacaaa  
ctctacaaagcataattcaaaagcgtgtgacttgggtgca

>IGR1091a

cagatagatgccttaggaccttagggcttaattctcttctggaccagttgagaaaagct  
gtctaggcaaacatgctcattatagctacagatggcacaaaaccatgccatgtgactgaa  
tcaagacccggtatggctcgtgactctgaatgacaaaactctacaaagcataattca  
aaagcgtgtgacttgggtgacttctgtgtggaatggaaggattcaagatgtcagctggca  
attccaggaaaaactgtgattaggcttttctagaagtggcatctgaagagcaaatggag  
aggcctgttcttcaggctctgggtggaccctacaggagcaggccttgactctgtgagt

agcctggcttgccttccacatggcaatgccacttagagaggaatcaggattgatggtga  
agccagtatgctacacaggaatagacgcagaggagtgttacaggcttctcacgatgggca  
gatcaggcctcaagtgggtcagagcttccaaaggtgggtgtgcacagtggagaatttct  
ctctgtagagagagctctgagcttgatgaccatctggaaggatgttaggagaagaag  
gtggtgggtactgacttagatgattacttaaggttctgtcaactttgagacccattc  
aactacttcaaatttttagttggggaaaccaagtccagag

>IGR1092a

agagctttccaaaggtgggtgtgcacagtggagaatttctctgtagagagagctctg  
agtctggatgaccatctggaaggatgttaggagaagaaggtgggtggtactgacttag  
atgattacttaaggttctgtcaactttgagacccattcaactacttcaaattttagt  
tggggaaaccaagtccagagagagaggtcactggattataaagttaaaagcagagcca  
aacatacatctcaccatttctggtcatcctcagatattaatactcagttttcaaaccac  
atgcaaggaagtaaatcagaggtaacatttaactatgatttaaaaaataccaaaacca  
taaatttcaaggcagtaattatctccttctcaacagtgtttgagaagaagcatgcatt  
tgcactggggagggagggcacagagtcgagtcctggctgtactgctgaaccctgaaggcct  
gacagaggctgcctggatggatgaagagcagcaaatcagaaacaggcaatctgtccaa  
ttttagtgaaacaagttcatgattttagaacctctcaacatccaaatcctagacaca  
atgttctttgaaagaatatatttcttattgactaagttgatatgagaataaagtttct  
tattatacactttctgaggacctacatttctatggcattt

>IGR1093a

gggatgaagagcagcaaatcagaaacaggcaatctgtccaattttcagtgaacaagttt  
catgattttagaacctctcaacatccaaatcctagacacaatgttctttgaaagaata  
tattttcttattgactaagttgatatgagaataaagtttcttattatacactttctgagg  
acctacatttctatggcattttaaattcttgatatttttaataacattgaatccaggga  
gctaacactgcatttcacaatctctgagcactgatcgatgttcttttaacctgtagaa  
tttctccacatattcagaacgtcctaaaagctccacaaatcttcatcatgagtattac  
cagaagctggaagttacgctgctgtgagcgactttttattatcctgcaacaatatattca  
gaacatatattagtaaagagcataaccccttcttgattgaaaagtcaccgcaaacct  
tgtcagacacatgaacttgtgtgtgtcagggccccagctaccctgcaggaaagtggag  
gggtggccccaggccttcaggccagccaggcaggagtctcttctctcctccagacagtag  
ggacacatggcctgactctcacttaggtctggcttagggactcacaggaatacaagaac  
tagtttcttccagatcagaagttctactaaagcaggtat

>IGR1094a

tgctgtgtgtcagggccccagctaccctgcaggaagtggaggggtggccccaggccttca  
ggccagccaggcaggagtctcttctctcctccagacagtagggacacatggcctgactcc  
tacttaggtctggcttagggactcacaggaatacaagaactagtttcttccagatcaga  
agttctactaaagcaggtataaatattttattgagtttcttaataccaaactgttc  
aactatagaaggcttactccttcgctgggatttctgacctgttactacttttctctg  
gaagaaaaatttaaagtaataaagacaaactacaggttaagggaataaactgctttct  
taagagctgggtctacttagaattctgccaccaccagtcactagatgcattactatg  
acacacagggacctgagtgggtgttctgggaacattttgctgaggttaaccagcaatgtga  
ctgaaacctgaaagacttttcttttagctagccacttatcccttctctggagctggatg

catttgaggtttcaaaagcactcgcccttacttgtgatgatggctgcagaaaggtggccc  
tgcgctgctgagctctccttctggccctctctgccagaaaggactgtctggagccagga  
gtgcctgaaacacctctttagacctcagggaactgcctt

>IGR1095a

ttcttttagctagccacttatcccccttctggagctggatgcatttgaggtttcaaaagc  
actcgcccttacttgtgatgatggctgcagaaaggtggccctgctgctgagctctcct  
tctggccctctctgccagaaaggactgtctggagccaggagtgcctgaaacacctctt  
tgacctcagggaactgccttttctctgccagcatagtccttatgcaagagctcctga  
caaccttggcgtctacactgacccaggtgaatgtggtaaaaggtgtgcaattttaccct  
cactggactttacctaatactcaataagcttttgagtaagagctctgtcattctcaca  
gttctctgacacatgtggaaagctggggagacagtcctaaaccactaccactacctgca  
gatgtcttagcaggcatgctaattgctgtgcatgacatgtgggttcctctggtaggtt  
acaggaaaaccaggccaggaacccctcacagtactctcctgtgaacacacttgggg  
agctgcaggatgtgtctggggctgtgttcacatctagttccttaggagggatctgaa  
gaattactatcaaaagtgaaagcccagggcctggcaccaactggcttcccaagaagtg  
ggaacacagctagagaacgtttcatcacagaactctctt

>IGR1096a

aacccctcacagtactctcctctgtgaacacacttggggagctgcaggatgtgtctgg  
ggctgctgttcacatctagttccttaggaggatctgaagaattactatcaaaagta  
aagcccaggcctggcaccaactggcttcccaagaagtggggaacacagctagagaacg  
ttttcatcacagaactctcttgggtttgaagaactatcacaacctgtcccaaatgtgag  
atacttactcaaccagagcatgtgcaagagatacttactcaaccagagcatgtgcaagag  
attcaatgttttctcggtaagattgtgttggtcctcatcaaggcaatgatgccacagt  
tgaggcagaacgtttcagccaggccaggcgaatgatgagttaggctaatacctggaaaa  
aagcccctatgtgagaagccagcacagaccttctcatctcatggcaggcaagcagtcct  
gacatgatcttttcagcagggaaggtgggaaagtcacaggttactgttaggtaagc  
actgccctctgggagagcccagcactgggaccagattcttatgtcctccagaaggagaac  
ctgcatgatctcagcctatcattaccacaaaacaaatgctcagaacaacgctgatgct  
ctcacataaaaaattacatcagctacaaccaacttgagac

>IGR1097a

ggaaaagtgggaaacgtcacaggttactgttaggtaagcactgcctctgggagagcc  
cagcactgggaccagattcttatgtcctccagaaggagaacctgcatgatctcagcctat  
cattaccacaaaacaaaatgctcagaacaacgctgatgctctcacataaaaaattacat  
cagctacaaccaacttgagacaaaggctagaacagagacaatgccatttatctgtaat  
tttaataatcctgtaagatgagcaaccttaaaaattcttgacctggctatttgcctgata  
atgggatctgttagaaaacttcgacacgttttctagagcctctcacttttctctgtac  
ctttaatttccatattctgtgtataatcctgagactgagagaataaaaaagaaaatcc  
taggtcaaagtatcaggagatagaaatgtggtttcagttaagcttacctgtagaaaatc  
caagtaactggaactgttaggcattttctgtgttactagaacctaataactaaaaccctc  
agaccactgaaacctctgaggatacaagacacacagaattgagagagtagggctatctc  
taggaagtataaactactctgggtgtgagctgtaagtccccttccccctcagtttggg  
tgggtgcgcacacatcagtgagttggttaatttagaatag

>IGR1098a

ggcattttcgtggttactagaacctaataactaaaaccctcagaccactgaaacctct  
gaggatacaagacacacagaattgagagagtagggctattctaggaagtataaactactc  
tggtgtgagctgtaagtccccctttccccctcagtttgggtgggtgcgcacacatcagt  
gagttggaattttagaatagttatgtcttttcttaatgcctaggcaagccagaagac  
agggccacagcttggccctgtgaggacagggcatttccttctgtcttgaatccaaact  
gctgtcaactctaccaccacccactcacatgcagagcccctggctggctgctagagcctc  
agcaaaagccagtgtaggtaggctggaggccaccctcattattgttctctccccca  
caccaaggagacaattattgctaattaatttcataactcagaatagctacaaaaatct  
tttctcaagataattttgaaagtattttaattcaaagagaccatgttcaaactctg  
tattttctattataattaccactaaaaatcatcaaacgacgtagggatactgattaca  
galcacaagttgtcattttgtagactatgatttagacagtaactctgcagatgcttaa  
attgggatcagctgtctaggctgacaacataatacatata

>IGR1099a

gaaagtatttttaattcaaagagaccatgttcaaactctgtattttctattataatt  
accactaaaaatcatcaaaagcacgtagggatactgattacagatcacaagttgtcattt  
ttgtagactatgatttagacagtaactctgcagatgctttaattgggatcagctgtctag  
gctgacaacataatacatatatgcattggcatgttcttttttttttttttttgagacgg  
agtcttgccttctgttgcctgggtggagtgcaatggcacgatctcggctcactgcaacct  
ccgcctcccagggtcaagcaattctcctgcctcagcctcccagtagctgggattacagg  
cacatgctaccatgccagctaattttgtatttttaatatagacggagtttcaccatgt  
taggctggctcgaactcctgacctcaggtgatctgccgcctcggcctccaaagtgt  
gcatgattacaggtgtgagacaccatgccagctgcatggcatgttcttaagcaaaaactg  
caaaactatgaaaatgagttagataatgtaagcatctattctatgattttagaattttat  
ttaaaaaaagtcagggcctagaggtgtatcaagtgaatcttctgccttgatctgaaa  
gcagaaagctcaagtatctgtgacatctttgttacaacc

>IGR1100a

accatgccagctgcatggcatgttctttaagcaaaaactgcaactatgaaaatgagtt  
agataatgtaagcatctatttctatgattttagaattttatataaaaaagtcaggggcc  
tagaggtgttatcaagtgtatcttctgccttgatctgaaagcagaaagctcaagtatct  
gtgacatctttgttacaacacctgtgcacagtgaaggatccagccttgtcccaaggatg  
ccatattcctgattctttaaacttcattcctcttctgattccaatgtaggctgtcct  
cacagagccttacctgaagccagatggcctgaccagcagctaaagtcttgtgtatgctg  
tggtagggacttagttctatgaggggctactttcttaatgagactccttactatactgga  
atattcattctagcttaagctagaatctggtttgcaatactattatgtcattgattctga  
aacatcttatggttataattgcatttttcttctgctggcacataaaaatagtggtatg  
tcttataactgatgagacagtgccttattctgataaggagtgccatgaaaactctaacg  
ggcttcagcttctgttctacatttagcctatcctgtgagaatgcttcaggcccttctt  
ttaaagctacataatgttgcaggaaatgttggttagct

>IGR1101a

tgcaatttttcttctgctggcacataaaaatagtggtatgtcttataactgatgagaca  
gtgaccttattctgataaggagtgccatgaaaactctaacgggtcttcagcttcttcttc

tacatttagcctatcctgtgagaatgcttcaggccctcttttaaaagtctacataatgt  
tgcaggaaatgttggttagcttcaggagagtgaataatagtagctgagcctgattcatt  
ttatatagcagcaaagagcttcccaccattcagggtgtagccttggtgcttccactgcac  
tgatgtttgttctctctttcagttacttgggtgagttggctccccaggttttgagata  
cctgcctttgtccagcactgcacgtcctcgcataccaaggctgtgtcctccttcagc  
atcaccactcggtagtataattccgcctttatcagaagctgatacatttcacggca  
tcagaccgtatttctatgtattcaatatctgacacaggaagaagaatatttagaggaac  
ctatgctctgtagcctttgtcatttacaacatatcaagtaagcctaggaacaacagat  
gaggctgacattaccagaggaaaaacaatggctggtgtggaaactcttctctggctggga  
ggattcaagagcctggtggtctggccagaagcaaccaga

>IGR1102a

attcaatatctgacacaggaagaagaatatttagaggaacctatgctctgtagccttt  
gtcatttacaacatatcaagtaagcctaggaacaacagatgaggctgacattaccagag  
gaaaacaatggctggtgtggaaactcttctctggctgggaggattcaagagcctggtgg  
tctggccagaagcaaccagatgccccagttcctcagcctcaactcttcttagttccc  
tgtaagagtttctccaggccaggcggtggctcacgcctgtaaacccaactggga  
ggccaaggtgggcagatcacctgagggcaggagttgagaccagcctggccaacatggtg  
aaacccatctctactaagaatacaaaaaattagccaggtgtgggagcgcgcacctgtaa  
ttccagctactactcgggaggctgaggtgggagaatcacctgaaccaggaggtggaggt  
tgcagtgagccaagattgcaccactgcgctccagccccgggtgacagagaagtgcgagact  
ccatctggaaaaaaaaaagaaaaagaaaaaaaaagattcctctggtggttttc  
ttattgcattttggcttatccctatctacactatgacagaacctattatgtcatcagcta  
aatataatgcctactgcagtcaaatatgtaagtctgtta

>IGR1103a

accactgcgctccagcccgggtgacagagaagtgcgagactccatctggaaaaaaaaaa  
agaaaaagaaaaaaaaagagtttctctggtggttttctattgcattttggcttat  
ccctatctacactatgacagaacctattatgtcatcagctaaatataatgcctactgcag  
tcaaatatgtaagtctgttaggctctggaacagaaaactttacattttctgtacaag  
atgttgccaagataagaattcttagaaaatctcaaagacatgcttagaaaggggtccagg  
gaggtaatgctggcatgatgagaggtcataagggaagagctgcggagagggtttggaa  
agagcatttgtgataccatgggtactcacctgtccacgatagggtctcggcacaggt  
cacgtataattttattgatttcttccattttcatactgtgaaatttcattattgctctgg  
aaaagggaagtcattgggtacttcatatataaaaaataattatgtgtaataagtaattaa  
aaatacataaaatatataatataaaaaatagaatatataaacttcctcaatattt  
caatggtaaaagtagaatatagtaagagctacaaaaataaacagcagcaaaactttgctg  
cttggctaatactgaaaattggcaggcttatttctagtgc

>IGR1104a

ttcatatatataaaaaataattatgtgtaataagtaataataaaatacataaaatatataa  
tatataaaaaatagaatatataaataacttcctcaatattttcaatggtaaaagtagaata  
tagtaagagctacaaaaataaacagcagcaaaactttgctgcttggttaatactgaaaat  
tggcaggcttatttctagtgtctccagggtacccttctccatattcactctctaggatac  
aacaatactcctttacgtaataacttaataactgtgaaaacttcaggaaacataattt

ttagactttttcttaggccgtgtaacttattggaggggaatgcttccactgatactcac  
gggtcacagggaaggcctgctgaatggacgacagggagttaagggtagaagggttacggg  
tagccaaggggcctgcagtctatgggaaaataggagaatgaactgccacctgtccct  
cttctactactgtaaggcttaccaaaagtcagcttctatgttggtttattcctcaga  
tcttagattttaccaactggaagccttggttcagcgagaatgattagaagcttaagct  
gaactgacatcaaaattttattttaccttccacagattcagaaatcctaattctaa  
atattaacttccatatttatattccaaatcctaactctaa

## &gt;IGR1105a

ttacaaaagtcagcttctatgttggtttattcctcagatcttagattttaccaact  
ggaagccttggttcagcgagaatgattagaagcttaagctgaactgacatcaaaattt  
attttaccttcccttcacagattcagaaatcctaattctaaatattaacttccatatta  
tattccaaatcctaactctaagcactaaattccacttagtccagacatgtccctgtcctc  
aactctcttttaaggtagtagtttctaactactaaaaacaaaggaggagaaatgtttgtaa  
aagcaaaagtagcctgtcaaacctaacattgttcccaccacagtcaccttcatcaaaa  
agcccttaggttcttggaagcgggttatgaactaataaatgttgaccagtggtaaaa  
aggcaaacattactgcgatcatcatacaaaaggatgtgaggatgtgaggcacttacttc  
atttgaggcctcttatctgatgcatacaaaaaaagaactgaatataatgctactgcct  
ctgtagaatcatttctgatcttctggttcaccagcaagagagaaagaaatgactcaaca  
taaatacattttaaatcatcagatgaaggactgtgaagtagtagaagactggaaaaaacca  
tattctgcttggtgatgagaatgcaacaagtctccattt

## &gt;IGR1106a

gatgcatacaaaaaaagaactgaatataatgctactgcctctgtagaatcatttctga  
tcttctggttcaccagcaagagagaaagaaatgactcaacataaatacattttaaatatc  
agatgaaggactgtgaagtagtagaagactggaaaaaacatattctgcttggtgatgag  
aatgcaacaagtctccattttaccttatacatttatctcagcctaacattttatgctc  
ctttcaaaaggagacaaaacatctaagttattcctaaaaacaaaacaaaactgatggaat  
gtagaccaatcatgtaagactgcctttccatagcttatatatcatgatcctgatttt  
caaatgacattaaaaaaagtattctttccattcaagttaaaatcttcaaaaactaaca  
taagcattctaattgtggagaacaagctccagacaaggcaggggtggccaaggcgcacacg  
tgagctgtccttggtcccttatacaacacaggtggtgcacctgtcccatggccaggt  
ctgctgagacacagcactgcgggaaaaagatctagttcagggagaggtctcaaccacca  
aagagtgtgctggatggagttgatgactaccactgtgggacggaccattaactcatcttc  
gtatcctctctgtctactatggaattacagctgtactgt

## &gt;IGR1107a

cttataacacaggtggtgcacctgtcccatggccaggtctgctgagacacagcactg  
cgggaaaaagatctagttcagggagaggtctcaaccaccaaagagtgtgctggatggag  
ttgatgactaccactgtgggacggaccattaactcatcttctgtatcctctctgtctacta  
tggaatttacagctgtactgtgtaagagatggggatgactaaggctgctacagtaaatcta  
cataagggaataacaatgataataatgattattattgatgaccatttaccatcgcgaga  
caaaactatgctaaataatcaatttcatttaactcttacgacaatactgggaattagata  
ctgttatctctatttaccattaacaaaactaagattcaatgaaatcagtgacttgttcaa  
gatcagagaaaaagtggttaggatattaacagcccttgaatatgacagttaaaattgaaaa



ggcagtcaaaattccatcttttaaagccaccagactcagttttatgagggatgttatca  
aatcttcaagacacacctagctcccaagtataaggtatgacacagcaaggagaaacat  
aaggggaaaaaagtacaaggctattttcttgaatataaacattctaaataaacgaa  
atttagtagtaagggtagtaaaaagaatatatcatgacca

>IGR1108a

tttaaagccaccagactcagttttatgagggatgttatcaaatcttcaagacacaccta  
gctcccaagtataaggtatgacacagcaaggagaaacataaggggaaaaaagtacaag  
gctattttcttgaatataaacattctaaataaacgaaatttagtagtaagggtagt  
aaaaagaatatatcatgaccaagtagtgtttacaacaagaaagaaacagtaaaactgggg  
aaaataattcaactaatatagtagcagattaaaaagaaaaaataattttcaatagatg  
tcataaaaacatttgatacactgaacactgaattttgataaaatatcttaagtgaaaaa  
tcaaagaatgttttctaactggacaaaatgactccctcagatatccacagcaagcatca  
aatttaatttaaaatctatagaagtgttcctcctaaaactaagaagagaaagatgcctcc  
tattatggctgctctaaaataaggtcctggaaatccctaacgattcagggtttcacgat  
tcaaaccctacctaaaaagaaatgagaaatgaaaaaagagagaaaagcctgtcattat  
tttgcaggtgacagaattgtatgcttagaaaaatccaagaaaatcaactgaaaaattatt  
cagactaatgagatagccagagataaatatataaaaatga

>IGR1109a

taaggctcctggaaatccctaacgattcagggtttcacgattcaaatccctacctaataaa  
gaaatgagaaatgaaaaaagagagaaaagcctgtcattattttgcaggtgacagaatt  
gtatgcttagaaaatccaagaaaatcaactgaaaaattattcagactaatgagatagcca  
gagataaatatataaaaatgaagttttattcttagaggcaaacaccaataggaaaggca  
atagaaaaaaaaggatcctattcacagtggcgataaaaaccctaaaatgcctaggaata  
agtctaacaaaagggtataggagctagaggaaaaagctgtaaaactttacaataggataa  
aaggaaatgattgagcaggagatgcatactaaggagtcagaatggtagatgtgatatta  
caaagatgtccgttctcctcaaataatccataaattaaatgcaatccaacagaaacccc  
aataaaattaaaaaatgcttaacagaatccataagctgactctaaagttcatatagaaga  
gataatacaaaaagaaaaaaataaattttaaagttggtatacaaaggaaaatccagaaa  
caaaccctaatgcatatagaacgttagtttataactgcaacagttcaatcaactggaaa  
gtttcaacagtggtacaaaagataaaaaaaaattatta

>IGR1110a

taacagaatccataagctgactctaaagttcatatagaagagataatacaaaagaaaaa  
aataaattttaaaagttggtatacaaaggaaaatccagaaacaaacccaatgcatatag  
aacgttagtttataactgcaacagttcaaatcaactggaaagtttcaacagtggtacaa  
aagataaaaaaaaattattaccggttatccaacctcaaaataaaatccaaatgaatgaa  
aggattaaaagctaaagtattgggcagctgaggtgggaggattgctgagcctggagtt  
tgagaccagcctgggcaacatagtgagatcccattctacaaaaaattttaaaattagc  
tgggtgtggtggtgagtgctgtagctccagctacttgggaggctgaggtgagaggatca  
actgagcccggaagttgaagctacagtaagctgtgatcatgccactgcactccagcctc  
ggtgacagagtaagaccctgtctgaaaaacaaaaacaaaaacaaaagctaaggtaaa  
ataaaacaatcagatgaaaacattttgataatttaggattgggaagcctttctaataa  
ggaacaaaattgagaagccataaatcaaaagactaaagatttgactacctaataaataa

agttacaaaagataccataaagaagctgaggcagctggg

>IGR1111a

gtctgaaaaacaaaaacaaaaacaaaagctaaggtaaaataaaacaatcagatgaaa  
acattttgataatttttaggattgggaagcctttctaataaggaacaaaattgagaagcc  
ataaatcaaaagactaaagatttgactacctaataaataaagttacaaaagataccata  
aagaaagctgaggcagctgggtgcgggtggctcacacctgtaatccaacactttaggagg  
ccaaggcaggcagatcacttgaggtcaggagtttgagaccagcctgaccaacatggtgta  
accctgtcttactaagatacaagaattagccaggcgtgggtgacatgcctgtagtcc  
cagctactcgggagggtgaggcaggagaatcgctcaaccgggagatggaggcggaagg  
aagtaagctgagattgtccactgcactccagcctggacgacagagctagactctgtctc  
aaaaaaaaaaaaaaaaaagaaaaacgaaagaaaattgatggacaaacgataaactgg  
gaataggtacttgcaatgtatgtgaaaataattaacatctagaatctattaaaatgtgac  
aaatcaagaacagacaacctagtagaaaaactggcaaagagatatgaataggaattct  
tggagaagaatacaaatagacaacatacaaaaagacatt

>IGR1112a

agaaaaacgaaagaaaattgatggacaaacgataaactgggaataggtacttgcaatgt  
atgtgaaaataattaacatctagaatctattaaaatgtgacaaatcaagaaacagacaac  
ctagtagaaaaactggcaaagagatatgaataggaattcttggagaagaatacaata  
gacaacatacaaaaagacatttaacttcactagtaaagggaatgtaaattaaagtgc  
aagcttttttgtgcagccaataaaatgtcagtaacaaaatccagacatggaatgggcac  
ttcatatactatttggtgaaattttctaagtgttttagaaggcaatttggcattaact  
aaaaatatacataacatctgagccagtaactccatttctaggaagctgtcttttgaca  
tatctgctttagtgtgcaaagacacactctgcagcattatctgtagtgcacatatata  
aagctttctaatatgttcaatagtgggttaataaagtagatatcatgcattttacagaat  
atgcagccattaaaaatacaaggtacttgaatatatgaacgtaaaagattatcaccacgt  
taaattggaaaaaaaactcagaaaaatctaccttgtagaatgcttacaagaacaaa  
aaagatgtatttgggtgtactatgtgcaaagccattgtga

>IGR1113a

atagtggtaataaagtagatatcatgcattttacagaatatgcagccattaaaaatac  
aaggtacttgaatatatgaacgtaaaagattatcaccacgttaaatggaaaaaaaactc  
agaaaaatatctaccttgtagaatgcttacaaagaacaaaaagatgtatttgggtgta  
ctatgtgcaaagccattgtgagggaatgaaatatgtcaccaacttaataattcttaag  
ggctgaatcaaagttagacactgtcatggaaatgagcctaagtctacctgaagtgtgtt  
ctgtggtttgcagttatggagcgtggggaagcccaatatctgtaatacaaggctgaatg  
gcittagtgtataagtggtacaaaatattattaagtacaaaggtaggaaaaaatcaca  
tatgtttgggaagggcttaataacataacattccaaggatgggagagatagcacaggaa  
aatatgggacaaaattgtttggttagaacacacttggtagtaggaattgaaatgggaaag  
cccaggtatggaagtcattcctaaaattagaagggaatagggaccaccagctttaggaaa  
atgaagctggcagaagtataatgggtggaggtgggggtaggaaggacggtgaagagataag  
agggtgggaaggtgccacggtaataggtgagagttactta

>IGR1114a

tggttagaacacacttggtagtaggaattgaaatgggaaagcccaggtatggaagtcatt  
cctaaaattagaagggaatagggaccaccagcttaggaaaatgaagctggcagaagtat  
aatgggtggaggtgggggttaggaaggacggtaagagataagaggtgggaaaggtgccacg  
gtaataggtgagagttacttaggctgaagccatgaaagaaggcagctctgggctgggtg  
cggtggctcacacctgcaatcccagcacttgggaagctaaggtgggaggatagctgat  
cccaggaagtcaaggctgcagtgcgtgatcatagcactgcactccagcctgggtgac  
agagtgcagatcctgtacaagaacctataggagctattgagtgcataatagtgcccaat  
taacttaacacgctttatcacttggactttacaggcatttaacatcaataacttacag  
aatgaccttgaaggtccatgactgtctggtgaggcaaagatttgaattcatgggctgca  
aactgttatgggtcaagtagccatctggctagtgtatcagctccaccacctgcctggagta  
tgcacatctcagttaaatgcataactaactcatgcaagtagtatgatttcttgtg  
aaaactggctcttaagtgagaggccaggtgaggtggctc

>IGR1115a

gactgtctggtgaggcaaagatttgaattcatgggctgcaaactgttatggtaagtag  
ccatctggctagtgtatcagctccaccacctgcctggagtatgcacatctcagttaaa  
tgcataactaactcatgcgaagtagtatgatttcttgtgaaaactggctcttaaagt  
agaggccaggtgaggtgggtcacgcctgtaatcccagcacttgggaggccaaggtgggt  
aaatcacttgaggtcagatgttagagaccacctggccaacatggtaaaactctatctc  
actaaaaatacaaaaattagccggtgtggtgggtgggcacctgtaatcccagctattggg  
aggctgaggcaggaggatcgttgaacctgggaggtggaggttacagtgcagccagttg  
caagaatgaactccagcctgggtgacagagccagactctgtcttaaaaaaaaaaaaaa  
aaaagtgcagctctcggagctcagaaaataatgatttataaattactttagtctgata  
tttaatactcattaagagctgtgaaagatttcattaaaaattcagtaacaatcgattgc  
attttatgaggaaaaatgatggctttaatggcatttatatttctgtaatccatgaaagt  
cttaacaagcttgccagcctgccttattttgttctg

>IGR1116a

agctcagaaaataatgatttataaattactttagtctgatatttaatactcattaagag  
tctgaaagatttcattaaaaattcagtaacaatcgattgcattttataggaaaaatga  
tggttttaattggcatttatatttctgtaatccatgaaagtcttaacaagctgtccagc  
ctgccttattttgttctgtttgttctaggcttttagcagactgaagccatggtttt  
tagttttgtctctagtgcagcaaaaaggaggtgaggaagaggcttactgtgtccaa  
ccagaaagagaagctaagaacctgactggattctctccctggacacccacagacca  
atatctcaccttccaggagaagaccttccagctcttgcctctttaaactattaactta  
gtttcttttagctagactcccaaacatcagcttttacaattcagcctatggttcaatcac  
tatggcaagataaacatttgttaggtgtgaaacaccactggctatcttgggtttgta  
atctaccctcttgaggttcaggagctactgtgaaacctactgcacatccatggtcatgat  
agagatggtgacttaaggtgagccctgaataaagccctcatctgaagctcccctcgaat  
gcagggacccaggtctgaagagcctcacagaaagctggc

>IGR1117a

gtttaggtgtgaaacaccactggctatcttgggtttgtaatctaccctcttgaggttg  
caggagctactgtgaaacctactgcacatccatggtcatgatagagatggtgacttaagg  
tgagccctgaataaagccctcatctgaagctcccctgaatgcagggacccaggtctga

agagcctcacagaaagctggctaccttggatgcaaaactgtaaagggttacgtgtttacaa  
tgagtcttaaagaagcatgacctggccaggtgcgtggctcatgcttgaatcccagcac  
tttgggaggccaaggcaggtggatcacaaaggtcaagagatcaagaccatcctggccaaca  
tgggtgaaaccccgctcttactaaaaatacaaaaaattagccgggtgtgggtggcaggcgcc  
tgaatcccagctacttgggaggccgaggcagaagaattgcttgaaccgggaggtggag  
atggcagtgagctgagatgcaccattggagtccagcctgggcaaaaagagcgaaactct  
gtctcaaaaaaaaaaaaaaagtattacctaatatgcaacctccacatctggggaaaaa  
tgagagtagaacattttgggcatggggtagaacaccatatcttgagtgatataattctaac  
atcatttaaattgggtatattgtattagtatggggtaatac

#### >IGR1118a

gcaccattggagtccagcctgggcaaaaagagcgaaactctgtctcaaaaaaaaaaaaaa  
aagtattacctaatatgcaacctccacatctggggaaaaatgagagtagaacattttgg  
gcatggggtagaacaccatatcttgagtgatataattcaacatcatttaaattggtatat  
tgtattagtatggggtaatacatccaaatgatggataatttccccctttcatctatgt  
gtctctgaccactgccaatgcttatacttagtgatgttttagatgattactaataacag  
atggtaatcagcttttcttgaatgcactgctgacttctgtgttaccttaaatagaca  
gctgaacgcaacaattacactgactgcatgcttattctaaagacgtgaaagaatgagggga  
aattttgtaccttacttcttctgggtgagaaggcaatttagggctcaccgtataaatc  
ttgagaaggccactgtttgcgagcataagccacaaagactcaattttggggaaatttgta  
tcacctctttcattagaagaatccatctgagtaccaggtgaagagaactcagtaaacag  
cctggcttgttccctaacaagcctaattgctagaagcactcctgtacctctccacc  
cgccaggtccaccaagctccctcataggtcctcattctg

#### >IGR1119a

cgagcataagccacaaagactcaattttggggaaatttgatcacctcttttcatttaga  
agaatccatctgagtaccaggtgaagagaactcagtaaacagcctggcttgttcctaac  
aagcctaaattgctagaagcactcctgtacctctccaccgccaggtccaccaagct  
ccctcataggtcctcattctgctcagcatgcctctgtgactgaggcacttttctctgtg  
aaaagcccttcttcttaccagggccaggtcaaaaacagactatggagcacctaccaa  
ggctctccatcagacagactgtcagcagtttgaggaggagggacagggaagatattcctgtt  
tccccagagcctgacaagaaagtggcagagcaagggtgtgaattctttttattttt  
ctcttatagcctaattctggaagtgaagggaattcttattcctgctgccactggttctca  
gggtatgcaggatagctggagagctctacgtatgttttctattcagtgaatacatat  
gaaacccaggtctgcaggtcaatgggctgtaagagaagagctgaccttgagcaaaata  
cttacaagtaaaattgaaaacaaacacactgcctatttaacttggtccctggtccact  
ctaaccattgccccattttcttctccccgtcacaggag

#### >IGR1120a

gagagctctacgtatgttttctattcagtgaatacatatgaaacccaggtctgcagg  
tcaatgggctgtaagagaagagctgaccttgagcaaaatacttacaagtaaaattgaaa  
acaaaaccaacctgcctatttaacttggtccctggtccacttaaccattgccccattt  
tcttctccccgtcacaggagaagttgttataagaattatctatattctctgtctccatt  
tcttttcttttttcttgagacagtttttcttctgttggccagggtggagtacaa  
tggcacgatcttggctcactgcaacctccgctcccggttcaggcgattctcctgcctc

agcctcctgagtagctgggattacaggctaggcaccaccaggcccagctaattttgcat  
tttagtagagacgtgggttcccatgttggtcaggctggctcgaactcctgacttcag  
gtgatccaccgcccgtggcctcccaaagtgtgggattacagggtgagccaccgtgccc  
ggctgtgtctccatttctactaccattctctccccaccaacttgaccgggcttcag  
ttccaactgtgccactgactgctcctcagtcattaacaactccattttgtcaaattaa  
gggccacttcttagtccttatttatttgactccaaatag

## &gt;IGR1121a

ctcccaaagtgtgggattacagggtgagccaccgtgcccggctgtgtctccattct  
tactaccattctctccccaccaacttgaccgggcttcagttccaactgtgccactgac  
tgtcctcagtcattaacaactccattttgtcaaattaaagggccacttcttagtcctt  
atcttatttgactccaaatagcattagattcttgatatattgtcttcacttggtttcaa  
galaccacatcttttaaatctttcccatcaccagctgcttatttactggatttgca  
aacataactagtgggtgggacctttcccttctctctatgtcattccacatgtgatctc  
atctcatgggttaaatgccgtggatatgctgatgactccccagtgacaccttcacttg  
aactctaggctcgagggttatataccaactgcctgcttgacagctctgcttagatatca  
caggcacttcaaactaaagtgtacaaaacggaactactgattttctctcccagtccea  
ccatttttagggaatggcaacctgttctccaatatcctgtgttcaagcaaaaatatgt  
aggagcaacctttggttatttactttccctcccttacactcaattcagaagcaaggcct  
gtcaactctctctccagaacaaatccaagttctatcactt

## &gt;IGR1122a

gtgtacaaaacggaactactgattttctctcccagtcaccacccattttagggaatggca  
acctgttctcccaatatcctgttgtcaagcaaaaatatgtaggagcaacctttggttat  
tttactttccctcccttacactcaattcagaagcaaggcctgtcaactctctctccagaa  
caaatcccaagttctatcacttctctccattttcactgctaccacctgatctagcccacca  
ccatctcttggttactacaagtcctcctcagtcctgcttttactcttgccctttaca  
atccattctccacaccagcagccagtgcaatttcttccaactagaatcagattatatt  
acttccctgcttcaaacctccagtgactgcccgaatgcagttagaatgaaataaaactgt  
ttgtttaccaaggctacaaggcatgacatactctgggaatggctatccctgactatatt  
ccacctatgcttgccttcttctggtccttgaaactttctgttctgactggtcttggt  
gtgcagtaactattctctctacctggaacgcctgcaccccatTTTTGcatacttgc  
cccttctcatcaatcagggtcccagcttaaaggcccatctgttatgtcacattgttcatt  
ttcactgtaatacctaccactactaccattttgttatta

## &gt;IGR1123a

tctgtgctctgaacactttctgttctgactggcttggctgctgcagtaactattctct  
ctacctggaacgcctgcaccccatTTTTGcatacttgcctccttctcatcaatcagggt  
cccagcttaaaggcccatctgttatgtcacattgttcatttctactgtaatacctacca  
ctactaccattttgttattatttatttcttaattttgttcttctccttataactt  
agtatctagaacagttatcaagcatttatgtactcaattttattgaacaaaatcctaat  
atacaactatgtattatgtacacaagcacctcactgaagagttacaaaatatagaaat  
aagttatggtttctaaaccaggaagtataagtaacagttaaaatgcttttatataaatact  
agtttttaacgggtataaaaaaaggcatgccgtaatcccagcactttgggaggctga  
ggagggtggatcacttgaggccaggaggtcaaaactagcctggctcatcatggcgaaacct

cgtttctactaaaaatacaaaaattagcccagtggtgtagcacatgcctgtaatcccagc  
tacttagaaggctgaggtcatgagaatcgctgaaccaagaggcagaggttacagtgagc  
agagatcacgccactgcactccagcctgagagagctgaga

>IGR1124a

gccaggagttcaaaactagcctggatcatggcgaaacctcgtttctactaaaaataca  
aaaattagcccagtggtgtagcacatgcctgtaatcccagctacttagaaggctgaggca  
tgagaatcgctgaaccaagaggcagaggttacagtgagcagagatcacgccactgcac  
tccagcctgagagagctgagagaaccagtgagactccgtctccagaaaaataaaaaaaaa  
agcagggggccactatggtgtagcatgtcacagtgggtctgatatctaattttatctct  
accatttacctgggtaacttgggtagcctgcttaactgtctgataaatacttgcctt  
taaacagaggttagatacaataaataatcgattatgctatcatgtagtattcaattgct  
attattgtcttctatgcacagccctcaacctcaagaatgtttaatgggaacagaaacc  
tacgttttctaataatgatttagttcttagtctattaaagaatagagaatttaagaact  
taacttacattaagaatggaacatgacaaggagctggactaaatcgctctgagctt  
ttctgactctatactgaataatagtagatttttaaaaattctattttatagatgagga  
aacggaaactcagagtgcttaataatttgctaaatatct

>IGR1125a

tagttcttagtgctattaaagaatagagaatttaagaacttaacttacattaagaatg  
gaacatgacaaaggagctggactaaatcgctctgagcttttctgactctatactgaat  
aatagtagatttttaaaaattctattttatagatgaggaaacggaaactcagagtgct  
taaataatttgctaaatatcttcagtcaggactcaaaatcaccactatggagaatagat  
ggaggttctaaaaaactaaagacagaactaccatagattctgcaatcccactactg  
galatttacgaaaggaaatgaaatcattaggtgaggagatatctgactcccatattt  
attgcagcactgttcataatacctaagatttggagcaacctaagtgccatcaacagat  
aaatggataaagaaaatgtggtcctctcgggcgcgggtggctcacgtctaattccagcac  
tgtgggaggtgagggcgggtgagcatttgaggtcaggagttcagatcaatatggccta  
catggcaaaacctgttttactaaaaatacaaaaattagccaggtgtggtggcaggaac  
ctgtaattccagctactcggaggtgaggtggaggtgcagtgcagctgaaatcacaccac  
tgacttcagcctgggagacagagactccgtctcaaaaaa

>IGR1126a

tggatcatttgaggtcaggagttcgagatcaatatggcctacatggcaaacctgtttc  
tactaaaaatacaaaaattagccaggtgtggtggcaggaacctgtaattccagctactc  
gaggtgaggtggaggttcagtgagctgaaatcacaccactgcacttcagcctgggaga  
cagagactccgtctcaaaaaaaaaaaaaaagtgttcataatacaaatggagtgctattca  
gccataaaataaaatgagatcctgtcatctggaataacatggatggaactgaaggacatt  
atgttaggtgaataagccaggcacagaaagacaaactttgcatgttctcattcattgt  
gggagtgaataaataaacaattgaactcatggagatagtgagatgtagttaccagag  
actaggaagggcagtgagatggttaacaagtacaaaatatagaataaagatctag  
tatattatagcacaacagagtgactacagtcacaatgtattgtacatttaaaataact  
aaatagtagtaattggaatgtctgtaacaaaaggagataaatgcttgaggtgatggaaa  
cctcatttacctgatgtgattattatgcattgtatgcctgcatcaaaaatatctcacgta  
ccacataaataataccggctatatagccataaaaaataaga

## &gt;IGR1127a

gtgactacagtcacaatgtattgtacatttaaaaaaactaaatagtataattggaatg  
tctgtaacaaaaggaaggataaatgcttgaggtgatgaaacctcatttacctgatgtg  
attattatgcattgtatgcctgcatcaaaatatctcacgtaccacataaataaccggct  
atatagccataaaaaataagaataaaaacttttttaaaaaaagaattcggccgggcgcg  
gtggctcacgectgtaatcccagcactttgggaggccgaggcggcgatcacgaggta  
ggagatcgagaccatcccggctaaaacgggtgaaacccgctctactaaaaatacaaaaa  
attagccgggcgtagtggcgggcgcctgtatgccagctacttgggaggctgaggcagga  
gaatggcgtgaacccgggaggcggagcttgcagtggccgagatcccgccactgcactcc  
agcctgggcgacagagcgagactccgtctcaaaaaaaaaaaaaagaattcaaatctgg  
acatctgtatgttcagagacagcacttttaaccatgtattatggacttctgaggcttt  
taaaaaaggtaaaccttatcatgttggactttatacaaaagccaatgtcttgcctttaa  
tatccatttttattttccatcacacaaccaacttatctat

## &gt;IGR1128a

gactccgtctcaaaaaaaaaaaaaagaattcaaatctggacatctgtagtgttcagag  
acagcacttttaaccatgtattatggacttctgaggcttttaaaaaaggtaaaacttat  
catgttggactttatacaaaagccaatgtcttgcctttaaataccattttattttcc  
atcacaccaacttatcttattccaaatagaagtttgggtatttttttttttttt  
ttttgagacagggtctctttctgtcacccacgctggagtgcactggcacaatcttgctc  
attgcaacccgccacgggcttctgagtagctgggattacaggtgtgtgctaccacgcca  
gataattttgtattttttgtagtgtgggtttcgccatgttcccaggttggtctca  
aactcctggacttaagcaatccaccactttggactcccaaaagtgttaggattacaggcg  
taagccactaagcctggcaaaataggttttaccacaaaaatctgtttgattgtgtc  
tcttcaataaaactataatcttctgtagaagttactggatctctattcctaatgct  
caatgaatgtttgataagctattagatacacagcatctgttgttaagaactaagaaaa  
actaaaaagtcccctaaggcataaatgaggtagctgaga

## &gt;IGR1129a

aaataggttttaccacaaaaatctgtttgatttgtgtcttcaataaactataat  
atccttgctagaagtactggatctctattcctaatgctcaatgaatgtttgataagt  
ctattagatacacagcatctgttgttaagaactaagaaaaactaaaaagtccttaag  
gcataaatgaggtagctgagaagactaaaaagaattattaaaggcaaaaaaaccaaaaa  
acaaaaacaataatgtatgtgtagtctactgggcaagaattccttaagttttgctta  
tgttctgtttcagcaccttaaatccaagactaaccactttaactgctggatctaata  
tctaggagagatggcaatattcaagaagttaaaaaacaaaagttctcatttgggtgcagg  
catataattctatgagccattttggaccaggaacattgtaatgttaacgtaccactc  
acaatgaaatgggacaaaagatatcatggaatctctcaaaaaattgttttaaaagt  
taaacttaatctaacaaaaatcttagtataatttatttttaaaaaataacatgttaattg  
gtcactcccaatattcacagtaaatggatctaattgtcttacatgattacgtacttc  
ctaaaactgtatatgccaaaaatatgcctaggcaattct

## &gt;IGR1130a

gatatatccatggaactctcaaaaaattgttttaaaagttaacttaatctaacaaaa  
atcttagtataatttttttaaaaaataacatgttaattggctcactcccaatattca

cagtaaatggatctaatttgtcttacatgattacgtacttctaaaaacttgatatgcc  
aaaatatgcctaggcaattctgggaccaccttgttatcatcactaactaaaaagtcct  
catactgaaaccagagttctctgtcttctgagccctgtggtctgaatgccactgctca  
ggttggctgttgactatgctgtatctgaccagaagtcttagaagagaagctctctgtg  
aactctcttagtgctaaggaagatattgccattctggaaaaacaaccaccacaaaat  
ctaaggtaaagtaataattctctgccacaaatgaacagaactactagatagacttataac  
aaaacttattttaattcatagttagctcacaagaagaaagggaatccctacataat  
agaacgaagatagaagtgaaccagaccagtcagtatgaacctgacagacaaactaa  
acttgggggttattattactgttattgttagtttgagacagagctcgttctgttgc  
ccaggctggagtgcaagtgtgcaatcttggctcactgcaa

>IGR1131a

tagttgagctcacaagaaagaaagggaatccctacataatagaacgaagatagaagt  
aaaaccagaccagtcagtatgaacctgacagacaaactaaacttgggggttattatt  
actgttattgttagttttgagacagagtcctgttctgttggccaggctggagtgcagtgg  
tgcaatcttggctcactgcaaccttacttccagttcaagcgattctcctgcctcagcc  
tctgagtagctggcattacaggtgtgcaccactacagccagctaattttgtattttt  
ttagtacagacggggttcacatgttggccaggctggtcttgaactcctcacctcaagt  
gatccgcccacctcggctcctccaaagtgtgggcttacaggcatgagccaccgtgcccag  
ccatgaacttggcggttattgtttataacctagggaattggttctatcatccaggacag  
aagatgaaggataggaccaagtaaggaagaagattagaagtgactccaacacacaaaa  
aatgggactcttcaagagctataacatcaatcctcaatgaaagagtggaataatgag  
ttgaaaattcaagcttgggcaaatgctttatatagttttgggggttcaagttatgcta  
ccagtgagtatagtctaggaacctaccaactaagaata

>IGR1132a

aagtaaggaagaagattagaagtgactccaacacacaaaaaatgggactcttcaagagc  
tataacatcaatcctcaatgaaagagtggaataatgagttgaaaattcaagctctg  
ggcaaatgctttatatagttttgggggttcaagttatgctaccagtgagtatagctagg  
aacctaccaactaagaaattaacaaaaacctacatgcaggccaatgtttctctggagc  
tcttagttaatataaaacaaaatttctgtgtagatggacctctacaaggaaaggtcaca  
agggagtgctcatagaaaaacaacactactaaagataagcacacaattaaatgtaataa  
aacacagaaacttactaggggatagaatcaacatacaaacagcagaagcagactcctc  
aaaatgtgaaattaaaaataacaatctgaaagagaatataaatgtgtatagttaa  
gagtaaagacacattcaagaaggaaatcaaaataactaaggaaagaaatacatcataagcct  
ggcacagtggctcacatctgtaatcctagcacttgggaggcctaggtataaatgtgta  
taaatgagtaaagacacattcaagaaggaaatcaaaatacaaggaagaaatacatcat  
aggcctggcgcagtggtcgcactctgtaatcctagcattt

>IGR1133a

aaggaaatcaaaataactaaggaagaaaatacatcataagcctggcacagtggctcacatct  
gtaatcctagcacttgggaggcctaggtataaatgtgtataaatgagtaaagacaca  
ttcaagaaggaaatcaaaatacaaggaagaaaatacatcataggcctggcgcagtggtc  
gcatctgtaatcctagcatttgggagacctaggcaggaggtcgttgaggccaggagt  
tcaagaccagccggggcaacatgacaaaacccatctgtaataaaaatacaaaaattagc



cgagtggatgcatgcatctgtaattccagctatctgggaggctgaggaatgagaactgct  
tgaactcaggaggtggaggctgcagtgcagccgagatcatgccactgcactctagcctggg  
cgacagagccagactctgtttaaaaaaaaaattataaaaaaacatgtgagttctg  
aaaaagaacaaaatagaacttatagaaaaaatggaggaaaaatgacaactcaataggc  
agltataagtagcagctaaataatttatttaacaagatattaccagagcccagtatatg  
caagagggggttaagcaatgtagaggaaaggagggttatgtctaataaaaagtgaagaag  
gggaaaatagtgagaaatggagaaagaataatttgaag

>IGR1134a

ttatagaaaaaatggaggaaaaatgacaactcaataggcagtataagtagcagctaaa  
taatttatttaacaagatatttaccagagcccagtatatgcaagaggggttaagcaatg  
tagaggaaaggagggttatgtctaataaaaagtgaagaaggggaaaatagtgagaaatg  
gagaagaataatattgaagagataatgtatgaaaaatcccaaaattgatggaagata  
tcaatctcagatcaaaaagcataatttatgagcagaagaactaaagctgagtctagaca  
cactattataaaaaatacagaacactgaagacaaagggaaaaatcctaagagaaccagggg  
aaaaaggcagattacttttaaggaataattaaaatgatttctcaactgtaaccatagag  
gccaacaaaaaatgaaatattttcaaagtccaagagaacaaaactgtcaatctagaact  
ctatgctcagctaaactatcaaattaaggggaaaaacttctaaagactgattgtttacc  
actaacagtcattcactgaaaaactattgaagaatatactccaaaaaagaaaactgaa  
cctaagaaggaggagtgaggatttaaaaagcaagaatgaacaaagaattgggaaacat  
gcgggcttatgaaaccaccacaataattattactcattg

>IGR1135a

caaattaaggggaaaaacttctcaaagactgattgtttaccactaacagtcattcactga  
aaaaactattgaagaatatactccaaaaaagaaaactgaacctaaagaaggaggagtg  
ggatttaaaaagcaagaatgaacaaagaattgggaaacatgcgggcttatgaaaccacc  
acaataattattactcatttgtgatgatttaaaaacaaggtaaaactaaaatattagaca  
aaagaaataatgcagatgagagaagataattagttcaggaaaaagataaaacaattca  
cattaagctatggttttaactttgatgtgcacagaatcacccaaatgtctgtcaa  
aaatagactgctgggccctacctctcaaattttgatcgaggctctggggtagaagctgag  
aggcatttctaactgttccaaggtgatactgataatggtgctccacgaccactttgaga  
actaatgcatatgatttaagtc aaataagtttaaaaattaaaaagtaaacactcaaa  
taactaaagtagaataacaaccgatccttgaacacaggttgaaccatgtgggtctatgtt  
tatgtagatttttccacctctgccatccgagacagcaagactgacccctcctcttctt  
cctcctcctcttcaatgtgaaggagacaaggatgaagacc

>IGR1136a

agtcaataagttatttaaaaattaaaaagtaaacactcaataactaaagtagaatacaa  
ccgatccttgaacacaggttgaaccatgtgggtctatgtttatgtagattttctccac  
ctctgccatccgagacagcaagactgacccctcctcttctcctcctccttcaatgtg  
aaggaggacaaggatgaagacctttatgatgattcatttcacttaacagaaaatatatt  
tcccttataatttttctgtctccagtttactttattgtgaaagaatactgcataaat  
acacataacatacaaaaatatatgtaataactgtttctgttatcagtaaggcttccagt  
caacagtaggctatttagtgaagtctgagggaatcaaaagtatatgtggatttctg  
actgcgtgggggggcttagtgccttaatccccatgttatatggtcaactggataacccaa

agaagggaaaaaggaggagtcaagaaaaataatccatctcaaaaaggcaggaaaggaaa  
aaaagatggcagaaataaatccaactcaattgagtaatcagaatgaatatgaaaggccta  
aattcactgggttaaagacagacatacactggataaagaaaattctgctatatgtaatta  
agatggtgagagaaatggcacagagatagacaaagtgatg

>IGR1137a

tcaagaaaaataatccatctcaaaaaggcaggaaaggaaaaaagatggcagaaataaa  
tccaactcaattgagtaatcagaatgaatatgaaaggcctaattcactgggttaaagac  
agacatacactggataaagaaaattctgctatatgtaattaagatggtgagagaaatggc  
acagagatagacaaagtgatgaattaagtagaacagagaaccaggccaaccagggcaca  
taggggaattctgatatatgacagaaatgacactgtaggctcactgagagaaggatagtcta  
caataaataagagccaagacaaccagttattcataacggaaaaaattcaacttagaattaa  
atacttaaatgtacttacatgtgaaaggcaaaatttaaacttttagacaaaaatataga  
agtagggcgtggcagctcacgcctgtaatcccagcactttgggaggccaatacaggtgga  
tcacgaggtcaggaaatcgagaccatcctggctaacacggtgaaaccccatctctactaa  
aaatgcaataaaattagccgggcgtagtggcgggcgcctgtagtcccagctactcaggag  
gtcagggcaggagaatggcgtgaacctgggaggcagagcttgcaagtgcagccgagatggcg  
ccactgcactccagcctgggcgactgagtgcagactccgtc

>IGR1138a

agaccatcctggctaacacggtgaaaccccatctctactaaaaatgcaataaaattagcc  
gggcgtagtggcgggcgcctgtagtcccagctactcaggaggctgaggcaggagaatggc  
gtgaacctgggaggcagagcttgcaagtgcagccgagatggcggcactgcactccagcctgg  
gcgactgagtgcagactccgtctcaaaaaaaaaaagatatatctctctctctctctct  
atatatatatatatctttatatatatatatctttatatatatatatagagagagagag  
agagagagaggagtagagagagagagagagagagagagagaggagtagggaaggatttct  
taacaagacacacaaagagctaaccagaaaaggctgctaattcaactaactcaaatca  
aatccagtgatcaaaaagatgctaagtaaaaaagataagcataatgtttgaaaagacat  
ttgtaatacatataactgaaaaggaattgaaatgcagaagagataaagaacacatttaa  
tcaataagaaaagaccaatagggccaggaacaatgcctcacacctgtgaccccagcactt  
tgggaggccgaagtgggagggaatgcctgagcccaggagtttgaggttacactgaactatg  
attgcaccattgcactctagcctaggtgacaaagagagac

>IGR1139a

aaaggaattgaaatgcagaagagataaagaacacatttaaatcaataagaaaagaccaat  
agggccaggaacaatgcctcacacctgtgacccagcactttgggaggccgaagtgggag  
gaatgcctgagcccaggagtttgaggttacactgaactatgattgcaccattgcactcta  
gcctaggtgacaaagagagactctgtcccaaacacacaaaaagacaagactaataatgt  
ataaacaacgattcatcattttaaacctatgaggttggcaacattaagaaattataaa  
accaatgtcagaggatccatcaataaaacccttatatactgctagtggatataatcagta  
gtcatttctgaaaaacaataattttgtaaaattgagcatactccacaatgcactcca  
caaatataaccttataccttctccagaagacatgacaagacctggaaaaaaccccaa  
atgtccatctgtaggagaatgaatgcattgtggtctattcccatagtagattatgtacat  
cagtgaaaaatgaatcaactacggccataaacaacatggataacaaaagcaaatccaat  
aaaaaagcaagtcctagaatatcatatcatcttttaaaaagctcaaatatgacatatata

tgataaaactgtttttaaaaaagcagagaaagtaaaaat

>IGR1140a

tgaatgcattgtggtctattcccatagtagattatgtacatcagtgaaaatgaatcaact  
acggccataaacaacatggataaacaagcaaatccaaataaaaaagcaagtcctagaa  
tatcatatcattttaaaaagctcaaatatgacatatatatgataaaactgttttta  
aaaagcagagaaaagtaaaaatctttgtcactggttatagggaatggggatgacagaaggt  
tgagataagaaggagcatctaagtggatgccaatcagtataatggttagattggttaga  
gggaggttagtatgaatactcgtagatattaatatgctttatatcttaacttcataac  
ttaagctagtgtgtttacatacacatacatatatttccaatccatggtatacata  
aaataccatatttaaagagaaaaaatgaggggctgggcgcagtggctcatgcctgtaac  
ccagcactttgggaggccgagggcgggtggatcacctcaggtcaggagttcgagaccagcc  
tgancnecatggngaaacnngtctctactaaaaatacaannattagcnngcgtggtgg  
cangcncctgtaatnccagntacttgggagngtgaggcagnnnaatcnnttgaaccggg  
aggcagaggttgacgtgagcngagatngtgccattgcact

>IGR1141a

aggcgggtggatcacctcaggtcaggagttcgagaccagcctgancnecatggngaaacc  
nngtctctactaaaaatacaannattagcnngcgtggtggcangcncctgtaatnccag  
ntacttgggagngtgaggcagnnnaatcnnttgaaccgggaggcagaggttgacgtgag  
cngagatngtgccattgcactccagcctgggnaacaanagtgaactctgtctcaaaaa  
nnntaaannnnnaagaaaaaagaaaaanannnnanaannngnnnannaannnnanttn  
nnnatntnaantgcantannnaatccccagctctaatacttactggtaagagtcttata  
ataaatatccagatccttgttcacaagtctgttgcctcataacaatcatcttctct  
atacttttctcagcatcccgaattgtggtctcgaagtcttctttaaatagaataat  
ttcttctcataaccttctgtcgcctaatagccaaattatgattctttttatattgtc  
tatgttctctccaacttctgatgttactgtaaaaaagaaaaatgacaaatgaggacca  
tttttagcttttaacaacctgaagtggaaaagtcatagatttcttagataggtaagt  
atcattctccttagcaatcagtatattataacagagtctc

>IGR1142a

tgctgcctaatagccaaattatgattcttttatattgtctatgttctctccaacttc  
tgatgttactgtaaaaaagaaaaatgacaaatgaggaccatttttagcttttaacaac  
ctgaagtggaaaagtcatagatttcttagataggtaagtatcattctccttagcaatc  
aglatattataacagagtctctccttgccttattatttagggccttgggtactaaagaaaac  
ccctctctcttccatctctgccgcacataggttgctaaatagctaattttgtgat  
tacagaacctcatagcatgtgatcactgataaagttcctggcctttagacgctaagtaa  
agcactctgggtgattaattacaaatcacaatcttctgattgtgaactgagaatgcac  
aattatcaacactaagaagttaggataacaggcttcacatcatttgcctcatgtcaa  
ggcacaatacgaattaaatcatatattaatttctgcagtaatacttataaaaatttag  
attctccatgaaaacaaaatttcttgcacaagtgtaaaaaccataataatgaccaa  
aaagtaaaatattcaacttttctgataatttggcagattatacaaatccaatgtatgc  
tttaaaaatcttcatttatttattacatttattaagcat

>IGR1143a

-230-

calatattaattttctgcagtaacttattaaaaatttagattcctccatgaaaacaaa  
atttctctgcacaagtgtaaaaaccataataatgacaaaaaagtaaaatattcaaact  
tttctgatatgttgagattatacaaatccaatgtatgcttaaaaatcttcatttat  
ttattatcacttattaagcatcctcttatgtgtcaggcactactctcaagcttatgggca  
tccttacagagtcgactggattacaagctctgttgccatttctgttatgtcctgggtgaa  
gaaacgttgaaaaatagttgtacttagtaatgtgaatgaatgtaaaaagtagctgtatg  
taccaattacagaagaaatttttaaatatctggtttggtctttagtagccacgaatat  
attttttatatcaaaatttcttctagaagcattactttccaacttgccatggagagta  
tcgtgtaaaagaactgaggcttggaactaggatattagggtcacattcttggtttcat  
cataatttctctgtgatgttctgggtctaatgtgcataatgcatacaaaaatgaaga  
ctctgaagatgatgagctctctagttaaaaatctgattccctgatataggaaagagat  
tttaaatagctaagagtacttaacaaaaacacaggattaa

&gt;IGR1144a

cttgggaactaggatattagggtcacattcttggtttcatcataatttctctgtgatt  
tttctgggtctaagtgtgcataatgcatacaaaaatgaagactctgaagatgatgagctc  
ttctagttaaaaatctgatttccctgatataggaaaagattttaaatagctaagagtac  
ttaacaaaaacacaggattaaccatttgttaggctttataaattaaaattcactttacta  
tatcctttagaaaagcctgggcatttttcattcagatttctgtataaattcaagaagac  
atgaaaactctacaaggaagggtttaataaatgagaggcctggatttaaccagctgaggt  
gggtgacaatctaagtattgcctagtacaacctttataaccagctagtgccttagcat  
caacaaggttcttacagaattcctaaggcaactaactctaaggcagtcaggcaggaata  
aaatctttctgctgtaccaggaaggtagcaactacaataagtaacaataagaccagata  
aaggagaatgaggtcatctttcaaaagaatgctctgggtggacacataattacaatg  
agaaaatctaaatgaatctctgtggataaatcactctggcaacaactccattgacaata  
ttatagactgtacaagctctgaccagacaagggtccacag

&gt;IGR1145a

aggaaggtagcaactacaataagtaacaataagaccagataaaggaagaatgaggctcat  
ctttcaaaagaatgctctgggtggacacataattacaatgagaaaatctaaatgaatc  
tctgtggataaatcactctggcaacaactccattgacaatattatagactgtacaagctc  
tgaccagacaagggtccacagctccatattctttatgcttagtaccactattctgtgcag  
caggctagcagatgtatgggggctaagcatgttcaatactgaataactaaggcccatcac  
tacagtgtgattaccaattctatatcacttctcagtaataaagtcttaaggccatgaa  
atataattgtatcaaaacactgttcaccttctagtaactctcaaggataaccaggctgag  
gctaaaattcttttaaacagggtatttaattcttcacattccagtaataaagacgttt  
atttaaaactgaagattattttaaaagcataccttttcatttgcaaaacctgcattgacc  
catttcttcaaatgtgttttcttcttctcaactcttttagttctcatttctttt  
tcttaagtaagggtatcttagccaccttctgtatctaaaggtaaacattaaatta  
gttaacaaaaataaccaagttactaacatgaaatctgtaa

&gt;IGR1146a

ttaaaagcataccttttcatttgcaaaacctgcatttgaccatttcttcaaatgttgt  
tttcttcttcttcaacttcttttagttcctcatttcttttcttaagtaagggtatct  
ttagccaccttctgtatctaaaggtaaacattaaattagttaacaaaaataaccaag

ttactaacatgaaatctgtaacaggcaactggtgacagcaagtgccatttctgtcttact  
tagaatcatgtgaaattcaacagaggggagaataagccagtgtgaaggaatctacaggtct  
ggggcaatctggatggcccatccccatccacagtgacaagtgtaatacctcctgtagcgc  
agcttttactgctctttcacaaccataatctaaaaaccaggctactgtttgatggggag  
tctcataaagatttgagcatatatctgtgtacttatttacttataaagtattaaaaacat  
acaaaacagacattttaaatggtgaaattaaaaatataactagatatttaataacctaca  
tccccagtggatcattttgcataggaacccccatgataaagcctactgacctgaaagatta  
taagagatcaatactactactgaagtcttcccaacttttctgctcctagtctgtctccc  
aacatgtaccaagaccattagaacctgttaggtatatgtt

>IGR1147a

tggtgaaattaaaaatataactagatatttaataacctacatccccagtggatcattttg  
cataggaaccccatgataaagcctactgacctgaaagattataagagatcaatactacta  
ctgaagtcttcccaacttttctgctcctagtctgtctcccaacatgtaccaagaccatt  
agaacctgttaggtatatgttacctgcaacttctaccttttaggttgacaaattgtaatca  
ctcaaggcagtaagaagtgccacaatagtagcatatatctatgaacttggtagctcctta  
gccaccgaaatgaaatttcaaaaaattggctgttctgttgtagtatttgccttcaaa  
agagactcaataacacttagcagcagcagcaacaacaacaaattatttcagtggtttct  
ctggtgattaaaatgaactatgttgcaagagacaatcattagaaaacagttttaagtt  
gattctttggaatttagaggaaaaaaatttctgcagaaagaagggtgatttggcccac  
aaatcatgtgtatagaaaacttattctgaatttggagtaaggatttctcaaagaggggagc  
tgggacctcctgcaatagcccttgcagctaagctaaactcagtacatgggaagtgaga  
gagatggacagacctgtggcaatatcttgcaccaacagta

>IGR1148a

gaaaaaaaaatttctgcagaaagaagggtgatttggccacaaatcatgtgtatagaaaa  
cttattctgaatttggagtaaggatttctcaaagaggagctgggacctcctgcaatag  
cccttgcagctaagctaaactcagtacatgggaagtgagagagatggacagacctgtgg  
caatatcttgcaccaacagtaaaaggccagggactggtagatgagagagggaaatcaagga  
tttctctcacatgcttaattgttcataatccatcctgccccctctatgcgtgactatttta  
gagtttttttttcttttttaacagtcacaaagtaaggctactttcatttttcttgaaa  
taatataaacatacaatttatccacagggtccacatctacggattcaactaacatggat  
caaaaatattggggaaaaaaaaataaaaagtaatagtacaataaaaaatacaaatttaaa  
ataatacaatataaaaactacgtatcatttacctatataatatacaaaagcaatctagagat  
taaagtatatcagaggatattggataggctatatgtaaacactagatatgccattttatat  
aagggacttgagcctcctagatttcgggtatctgttttatcgggggaccttgaaccaatc  
ctcccagagataccgagacaactgaatatgtatctacta

>IGR1149a

acgtatcatttacctatataatatacaaaagcaatctagagattaaagtatatcagaggata  
tggataggctatatgtaaacactagatatgccattttatataagggacttgagcatccta  
gatttcgggtatctgttttatcgggggaccttgaaccaatccctcccagagataccgaga  
caactgaatatgtatctactaaaggcattattataggcagttaaagggtactaaaatgac  
atggttataaatgtcctttgttgctaaagcaatctaattgtaccactgtagctgggtgtgac  
ttaccaaggttctactatgggggtactatgcttgttgccttattaggaacaagggaatg

-232-

tgctactgcttactttcatctaataccccagaacatttgaattgtttcacaattgcat  
gaaaggactctftaaagtctatcacatttttagatgagactgatttttggcaciaaata  
ttgttgcgtgtctacctgcattgttaccagacagctaggcatttctttgtttagg  
tcagctccattattcttctagtttgaagacagtatataccacatcaagagtgtaatg  
ctttgaagtcagatacatctaggctcaaatcacagtgttattacttttaactggataac  
tttgggcaaattagtttaattctctgaacctcagtttgc

&gt;IGR1150a

ctgcattgttaccagacagctaggcatttctttgttttaggtcagcttccattattcttc  
tagttttgaaagacagtatataccacatcaagagtgtaatgcttgaagtcagatacatc  
taggctcaaatcacagtgttattacttttaactggataactttgggcaaattagtttaa  
attctctgaacctcagtttgcattataacatgggtcaataatgatactatctatcataaaga  
actattgtgtggccgggctgggtggctcatacctgtaatcccagcactttgggaggccaa  
ggcagatggattacttgaggtcaggagttcgagatcatcctggccaacatagtgaaccc  
cacctctactaaaaatacaaaaattagccaggcctgggtggcactcgcctgtagccccagg  
caggttgaggcaggagaatcactgaacccgggaggcgaatgttgagtgagccgagatt  
gtgccactgcactccagcctgggtgagagagcaagactccatctaatttaaaaaaaaaa  
aaaaaaaaaaaaagactattgtgaagattaaaggaatgagtgatgtaatcagtatagtgc  
ctgactcaataattgctaataaaatgccttttgggtcaaattgtcctttgtactgtaag  
cagtgagaattccaattatagctctacaaaatgtatcagag

&gt;IGR1151a

tgggtgagagagcaagactccatctaatttaaaaaaaaaaaaaaaaaaaaaaagactatt  
gtgaagattaaaggaatgagtgatgtaatcagtatagtgcctgactcaataattgctaa  
taaaatgccttttgggtcaaatttgcctttgtactgtaagcagtgagaattccaattat  
agctacaaaatgtatcagagaaaggaagggaataaatcagatgcagttatagtatac  
caciaatgttttccattctactagaaatttgatagttagggctcagttctacctgtta  
ctacttttggaccttgacaagtcagggtcacctacagttcttctcatatattccttca  
gctgaaaactgagaaaggcagttaagttccaaattattttattctgtggactaaattta  
gcagggttaaatcagtagtaataagtgactgttaggtcctcagctcttaaatatta  
acccaatcatccaactcagatgacagttaatgcatgcagctggcacctatggaacat  
aaaaattagctgcattctagatactgtgagagagtgcatgctgaacagattacagtc  
aatgtccacaaaagtctagctgggaataacaccacttctacaagactgcctgaaagcta  
tgcagtcctccagtgctgggtcagttattgacagctaaa

&gt;IGR1152a

gatgacagttaatgcatgcagctggcacctatggaaacataaaaattagctgcattcta  
gatactgtgagagagtggtcatgctgaacagattacagtccaatgtccacaaaagtcta  
gctgggaataacaccacttctacaagactgcctgaaagctatgcagtcctccagtgctg  
gctcagttattgacagctaaaggatattagaacctctaaggaatttaacaaaacac  
acatactctgccccaaacccccagattctgatttactgggtgtggaattggagacatagac  
atatatatatatatttttgagacagggtcttgcctgttggccagggtggagtgcag  
tggcgtagtaagggtcactgcagccttgaactcccagctcaagcaatctcccacctc  
agcctcctgagtagctgggactacaggtatgcacatcacacctgggttaattttttgta  
gagatgggggttcgccatattggccaggatagcttgaactcccagggtcaagcaatctg

cccgcctcggcctcccaaagtgctaggattacaggcatgagccactgtgcccggccaaca  
catgtattttaataaacctaagtcatttttaaaaactgagatgtaattaattccaca  
aaattcactgtttaacgtgtacaatttagcagttttact

>IGR1153a

ttgccaggatagcttggaactcccaggctcaagcaatctgccgcctcggcctcccaaa  
gtgctaggattacaggcatgagccactgtgcccggccaacacatgtattttaataacct  
aagtcatttttaaaaactgagatgtaattaattccacaaaattcactgtttaacgt  
gtacaatttagcagttttactttatttacaagggtatacaaccatcaccactatccaatt  
ccagagcattgatcatcccaaaaggaaatctcatattcaatagcagtcactctattcct  
tcctcacctctagccccctggaacattaatctgctgtcactggattacctaattctga  
cattattataagtggaatcgtacattatgtgaccttttgactggcttctttgctta  
gcatgttttaagggttcattcatgtgtagcatgtatccttttatggctgaataatatt  
ccattgtatgggtataccacattttgttatctgatcatcagttgatggccatttgggtg  
tgtccatatttgactattacaataatgctgctatgagcattctgtacaagttgtgt  
gggaacatatgtttcaattttcttagttctatacctagaagtggaactcagacgat  
ttacaggtgccctagctaagaacctttgctttctaaca

>IGR1154a

catttgtttatctgatcatcagttgatggccatttgggtgtgtccatatttgactatt  
acaaataatgctgctatgagcattctgtacaagttgtgtgggaacatatgtttcaat  
ttcttagttctatacctagaagtggaaaaactcagacgattacaggtgccctagcta  
agaaccttgccttctaacaatttaacatttacttcaggttcaatcataccacctctac  
agaacctcgtatcaaggaataatgatgctgagatacactgtattttttaagccctgc  
gaagtctgtgaagactatacatgtcttcttctatgaatagagacattatctgtagt  
cagtataggaaactggtttcttttagcattgacacaatgtgaatcttgactaattgtga  
ctttttttttttttttttaagacggagcttggtctgtcaccaggctggagt  
gcagtgggtgcgctcggctcactgcaagctcgcctcccagggtcacgccattctctg  
cctcagcttctctagtagctgggactacaggcggccaccaggcctggctaattttt  
gtattttagtagagacggggttcggcgtgttagccaggatggtctcgtatctctgac  
ctcgtgatctgccgccttgccctcccaaagtgtgggat

>IGR1155a

tcactgcaagctcgcctcccagggtcacgccattctcctgcctcagcttctgagtagc  
tgggactacaggcggccaccaggcctggctaattttgtattttagtagagacg  
gggttcggcgtgtagccaggatggctcgtatcctgacctcgtgatctgccgcctt  
ggcctcccaaagtgtgggattacaggcgtgagccaccacgcctggtgttttgtttct  
gtttgtttgtttgtttgagacggagtttactcttgcaccaggctgaagtgcaa  
tgggtgatctcggctcactgcaatctcgcctcccagggtcaagcattctcctgcctc  
agcctctgagtacctgggattacaggcgcgtgtcaccacacctggctaattttctatt  
ttcagtagagatgggggtttacatattggccaggctagtctgaactcctgacctcagg  
tgatccgtctgccttgccctcccaaagtgtgggattacaggcatgagtcactgcgctg  
gcctcctctcttatttgactactagaatctcagcaagcatatcagacttcatgcatac  
ttttatacactctctcctgggttcattactttcttgccttatttctacactgccttg  
tttcccataatttgaaatacatattatctttgctctatt

>IGR1156a

tcccaaagtgcgtgggattacaggcatgagtcactgcgcctggcctcctctctttattga  
ctactagaatcttcagcaagcatatcagacttcacatactttttataacttctctcc  
tggtttcattactttctggccttatttctacactgccttgtttcccatatttgaaa  
tacatttatcttgccttattgtatataactaagtaataatttctggaacaaggaaggt  
tacaaagtaaactaataccatcagatccactaagtttagaccatcactttaaaaggggtc  
atagatcattaatcttaacaatttcgtatataatacagagagctgctgcgaattacag  
attgtgattttatataaggcaactacataaaagctagtataattattttgttatatg  
cactataaatttatacagttattcaatatgtattaggccaggcagagattgatctccct  
ttgactgataattcatatatttgaattcttgggtgtacagaaagagaccagcagaaaa  
ctaataagtaactatcttccaaatgattttaagcaaccactataaccaagtggttaaggc  
attcaaatagtaattttgtttaaaacagtaagaacagagaaatggtatagttttaaag  
gcattaactaccatgcttgcataaagcatgtgatgatggc

>IGR1157a

tttgaaattcttgggtgtacagaaagagaccagcagaaaactaatgtaactaatcttcc  
aatgattttaagcaaccactataaccaagtggttaaggcattcaaatagtaaatgtt  
tttaaacagtaagaacagagaaatgggtatagttttaaaggcattaactaccatgctg  
cataaagcatgtgatgtgcttcttaatatgattttgattatactatagaaattaatt  
ctttaatagagaaaaataatgatataggaatcaactggaaaatgacttaatatataata  
tttccttacagattactttcaagattattaaaccttaatccgtctttgtgaattatg  
ctacataaagatatgttagaataagaaaagatacagatacatgttaaagatgttcattgt  
cacacagtttgataaggaaatgaaatcaatctgagtaagtgtggtatatacacaaaa  
tggactattttataatcattaaaaaagaatgtgatacatctgtgagttgataggtaaaac  
aaattatgttaagtgaaaaaaggtacagaataacatgatacgaccccatccataaaagta  
aatttaatatatatatatatatatacacacacacctaatttatctacctatctgctgg  
tatatgaataaaaaacttctttaagaacaaataagtgtaa

>IGR1158a

taaaaagaatgtgatacatctgtgagttgataggtaaatcaaattatgttaagtgtgaaa  
aaggtacagaataacatgatacgaccccatccataaaagtaaatttaatatatatatat  
atatatacacacacacctaatttatctacctatctgctggtatatgaataaaaaacttc  
tttaagaacaaataagtgtaacagttaatgacatgtagaagtaagattgagaattaggag  
aaggggaggaacacttttatgcctttatgttcgaactttaccatgagcttttactgaa  
aataaaaaataaaaaataaatgaagtaagaatgtatttggaattattttcttactttt  
gcattttcttttagagacagagtcctgctgtgctgccaggctagagtgcagtgtgtacaa  
tcacagctcactgcaacctctgcctcccagggtcaggtgattctcatgcctcagcttccc  
gagtagctgggactacaggtgcgcgccgccagggcagctaattttgtattttcagtac  
agacaggggttactgtgttgccaggctggtcttgatctcctggcctcaagtgatccac  
ccgctcggccttccaaagtgcagggattacaggtgtgagccaccacgcttggcctcttt  
ccttttgcatttctattcaatggatcttctattgaaaat

>IGR1159a

tgcgcgccgccacggccagctaattttgtattttcagtacagacaggggttactgtgt  
tggccaggctggtcttgatctcctggcctcaagtgatccaccgctcggccttccaaag



tgcagggttacagggtgtgagccaccacgcttggcctcttcttttgcatttctatc  
aatggatcttctattgaaaataaaactatagaaaagaatgtcataggtgtaagtatac  
ataagcaaaacagacctacctctgtgtatcaatatctgtctcatgagtcatactt  
catttatcttttctgtgttctcgcattcacttagttgagctattactttattaagtt  
cagttcttttgcacaaaaagaaaattcttaagcacatgaataaaaatacaatcaa  
ataaataaatttaagtttaaaattaccttcttatagtcgtcttcccatcttgaataaa  
ttcctaatgtcttcatatagccatgaatattttaaccttctttaaatacattcagc  
tgtagaaaaatattcattaaattacactgggtgtacttaagggcacataacaggagagc  
acagtaaaacactggctgggaagtatgaacattgggtccagttccaccactactgaa  
tttatgatcgagacaagtccttctcacctataggaa

>IGR1160a

agccatgaatattttaaccttctttaaatacattcagctgtagaaaaatattcatta  
aatttacactgggtgtacttaagggcacataacaggagagcacagtaaaacactggctgg  
gaagttatgaacattgggttccagttccaccactactgaattttatgatcgagacaag  
tcctttctcacctataggaattgattaattagctcatttctaaacttctattgtatg  
caagcagcaaaaataattacatcaaatcctgttctaacaagaatttctaagtcaaaat  
tataccatgaatctgaaaatactatttattcttctgctatttaattcatgtgaaataagt  
gtccgacgtggtgctatgaacataagtttaatacagatatttgataagtaaatatataaa  
tgaaatcttactttatcctgtgctattttgttcttattttttgttgattaattct  
tcttttctgctggaactttccaatgttgttccaagggttacctgctcttagca  
tcctaaaaatataaaaaagataaagtattatataatattccattatcttactttagggt  
cagacttcacagcttataaaaaagcactttctatgtgccaggtctaaaagtaactcat  
ttgctccttcaatgacctatgaggacagtaccatcatt

>IGR1161a

ttccaatgttgttccaagggttacctgctctttagcatcctaaaaatataaaaaag  
ataaagtattatataatattccattatcttactttaggggtcagacttcacagtctta  
aaaagcactttctatgtgccaggtctaaaagtaactcatttgcctttcaatgacct  
tatgaggacagtaccatcattttcagtcctatatttcaaacgagcaaacagacagaga  
atgattgtccagggtcacacagccagtaaatgaagcagccaagattttaaccagtc  
agctccagagttcacgctcttaaccactacgcatgctatactgcataaccactaattg  
attcttaacttaggccatgtgctcccaattatattagcgtgtggcttcaagcatgagtt  
tcatgattttataggtcccgtcactgctgcatgatcaagaataggaaagctcattcag  
tccagactttcttttcagatgaaaacatgatggtaaaaacacttctgtccttaagctt  
agcctgctaaggctacgcagatatttcatggtataaaaagcactgttaactaatgtt  
gggtctccacaactattttggaaggaacggggcttcaagtaataaactattttactaa  
atagaagtccccattatttagccttgaacactaaatcta

>IGR1162a

gatgaaaacatgatggtaaaaacacttctgtccttaagcttagcctgctaaggctacgca  
gatatttcatggtaataaaaagcactgttaactaatgttggtgtctccacaactattt  
tggaaggaacggggcttcaagtaataaactattttactaaatagaagtccccattatt  
agccttgaacactaaatctacaacgtagttatataaccacagttcaaaacagaggt  
ccicaagcactttaagattctgaagtactgagtgaatctatagaggtatagatacaattatt

tagtaattacttcaatataggtctatttatcatactgggaagtggatgggtgttagg  
aagtc aaatgccctcagtgtcaaaagatctatcagaaaatcaactctgcttcctattagc  
tgcataaaccttaggcactcatgagacatttgtaaattc aattttctataaagagattt  
calcatctaaatagggttgctgaggcactgaatgggtcaatgtcaaagtgc tttataaat  
agtaaaaaattatacagatgcaagtactatttatattatctgaacctctgatattt  
tgtaatctaaaatttaataaaaattatagtaattattcagtaataatacttagtgcttat  
tgaatgagtagcgcataattatataaacctaggtgaagattg

>IGR1163a

ctgaggcactgaatgggtcaatgtcaaagtgc tttataaatagtaaaaaattatacagat  
gcaagtactatttatattatattctgaacctctgatatttgtaattctaaaatttaata  
aaaattatagtaattattcagtaataatacttagtgcttattgaatgagtagcgcataatt  
atataaacctaggtgaagattgtttataactgtttataactgggtgagctcttagatgtgat  
taatctatataagggatgtcaaatgcattccagtggcaactgagtgccctgctcactgtat  
tggtgaagggttctgaaaccacatccggaatcaaatggaaagagtgcctatgactgagagt  
accgccatagataaaggatctgcagataagacaacctcctgtacaagcaggaatcctta  
tacagaattaaccaaccaccacctgaccacctccaataacatttactacttaaccaggca  
gccagttcttcttattatggcaaacctcttctccagaaatctttactacttagtacaa  
gttctatcacttaggaaccacacaaataattattataaccatttctattgatcctcataa  
tagctgggtttcaaagggaatgcttcagttttgccattcagtatgatattggctgtg  
ggctctgtcataaatagctcgtattatgttgaatacattc

>IGR1164a

ggcaaacctccttctccagaaatctttactacttagtacaagttctatcacttaggaacc  
acacaaataattattataaccatttctattgatcctcataatagctgggtttcaaaggga  
atgcttcagttttgccattcagtatgatattggctgtgggtctgtcataaatagctc  
gtattatgtgaaatcattccatcgataacctagttattgagagcttttagcatgaagc  
gggtgtgaattttatcgaaggcctttctccatctattgggataatcatgtggtttgt  
ctttgggtctgttcattgtgatggattacattattgattgcataatgttgaaccagcctt  
gcatcccaggaataaagccgacttgatcgtgggtggataagcttttgacgtgctgctgga  
ttcgggttgccagttttattgaggattttgcatcgatgttcacagggatattggcc  
tgaaattttctttttgtgtgtctctgctaggtttggatcaggatgatgctggcct  
tataaaatgagttaggaggattccctcttttctattgttaggaatagttcagaagga  
atggtaccagctcctctttgtacctctggtagaattcggctgtgaatctgtctggctctg  
gacttctttgggtggcaggctattaactgcctcaat

>IGR1165a

tgtgtctctgctaggttttggtatcaggatgatgctggcctataaaatgagttaggag  
gattccctcttttctattgttaggaatagttcagaaggatgtaccagctcctctt  
gtacctctggtagaattcggctgtgaatctgtctggctcctggacttctttgggtggcag  
gctattaactgcctcaatttcagaactgttgttgggtccatttggggatttgacttc  
ttcctggattagacttgggaggtgtatgtatccacgaatttatccatttattttct  
agtattttgcgtagaggtgtttatagtattctctgatggtagtttgatttctgtggga  
tgggtgggtgatatccccctttatcatttttattgcattctatttgattctctctctttc  
ttctgtattagcttgcagtggtctatgttggatcttttaaaaaccagttcctgg

attcattgatttttgaagggttttcgtgtatctccttcagttctgctctaattcttag  
ttattcttgcctctgctggcttttgaattgttgccttgttctctagttcttta  
attttgatgttaagggttgaattcagttatttctgcttctctgtgggcatttagtg  
ctataaattccctctacacagtgtttaaatgtgtctca

>IGR1166a

gggttttcgtgtatctccttcagttctgctctaattcttagttattcttgccttctgct  
ggcttttgaattgttgccttgttctctagttctttaattttgatgttaagggtgtt  
gaattcagttatttctgcttctctgtgggcatttagtgcataaattccctctaca  
cagtgtttaaatgtgtctcagagattctggtacattgtatcttgttctcactggttc  
aaagaacatcttatttctgccttcattcgttattaaccggtagtcattcgggagcag  
gttgttcagtttccttgtagtgtgcgggtttgagtgttcttaacctgagttctaa  
tttgattgcactgtggtctgagagactgttgttatgatttctgttctttgcatttgc  
gagagtgtttacttccaattatgtggtcaattttagaataagtgcgatgaggtgctgag  
agttctggccattacactaataaagagcatttcatattaagaacatgggctgggtgag  
gtgatgtaacctgtaattttgggagggccaaggctgcattgcttgaggccatgagttga  
gaccagcctgaacaacatagtgagaccctgtctctagaaaaattttaaaattagccagg  
cglgggtggtgtgcctgtagtcacctctacttgagaggc

>IGR1167a

ataaagagcatttcatattaagaacatgggctgggtgaggtgatgtaacctgtaatt  
ttgggagggccaaggctgcattgcttgaggccatgagtttgagaccagcctgaacaacata  
gtgagaccctgtctctagaaaaattttaaaattagccaggcgtggtggtgtgtgcctgt  
agtcctctacttgagaggctgaggcaggaggattgcttgagctcaggaggctcaggct  
gcagtgagtgtgctgtgactgtaccactgcattccagcttgaagactgatgaagactct  
gtctctaaaagagaagaatggggcggggcatgctggctcacgcctgtaatcccagcactt  
tgggagggccaaggtaggcggatcaccttagttcaggagtttgaaccagcttgcctaatg  
gcgaaaaccgtctctactaaaagaacaaaaattagccaggcatggtggtgcacgcctgt  
aatcccagctactccagaggctgaggcaagagaatcactgaaccaggagatggaggtt  
gcagtgtgagccgagatcgtgctactgcactccagcctgggtgacagaacgagactgtctca  
aaaaataaaaaataaaaaataaataaataaattttacaaaaacatgtatggatattc  
ttacctttatctctgtacaaagactgaacttcagtggga

>IGR1168a

gctgaggcaagagaatcacttgaaccaggagatggaggttgcagtgtgagccgagatcgtg  
ctactgcactccagcctgggtgacagaacgagactgtctcaaaaaataaaaaataaata  
aataaataaataattttacaaaaacatgtatggatattcttacctttatctctctgta  
caaagactgaacttcagtggtataattccacagtctgtcctccagttgctgacgaggttg  
caaattagtggatctgaagtctcagattttagctcattgttgtacttttagatg  
ttgaatctgttctgctggtcctgtataagcttacgattcaattcaatttactagaaac  
tacacaaaaacatattatcacagtaattaatgtaagggcataaaaaatactattgtatc  
attcttccattttatcggtctatggaatccacaaatgctatttctgtgggccccacc  
actgcaacaaaaatacaatgagaacctgctagtctcaaatcagcttgatgttccctgc  
tggccactcacagggaagcttacagggcaggtatgaatgagaagaatacagctcatgg  
ccaggcgcactggctcacacttgaatcccagcacttgggagactgaggcaggtggatc

acctgaggtcaggagttcgagatcagcctgacaaacacag

>IGR1169a

gagaacctgctagtctcaaatcagcttgatgttcctgctggccactcacagggaag  
cttacagggcaggtatgaatgagaaagaatacagctcatggccaggcgcactggctcaca  
cttgtaatcccagcactttgggagactgaggcaggtggatcacctgaggtcaggagttcg  
agatcagcctgacaaacacagtgaacccccatctctacgaaaaatacaaaaattagctg  
ggcatagtgtgtgcctgtaacccagctactcaggagggtgaggcaggagaatcact  
tgaacccgggaggcggaggttcagtgagccaagattgcaccattgcactccagcctggg  
cgacaaaagtgaactctatcttaaaaaaaaaaaaaaggaaaagagaatacagcttatt  
catactctctactgttcaaatctgtgtgcaaagtaagagaacaaagagaagtgtatgc  
tttcagaaaaaagagcaaatatgtggacaggaaggaaactcgttgccatgtaaca  
gatataaaattgactgtaaaaggcatgtgctcgcaatgtcaaagtctctatgagtacaga  
aggacacagactgtattacctgtgtctaactgtgctgtttctctgtttctcctggttg  
actgttgacagttcgatctaagtctattcctttagct

>IGR1170a

aatatatgtggacaggaaggaaacttcgttgccatgtaacagatataaaattgactgtaa  
aaggcatgtgctcgcaatgtcaaagtctctatgagtacagaaggacacagactgtattac  
ctgtgtctaactgtgctgtttctctgtttctcctggtgactgttgacagttcgat  
ctaagtctattcctttagcttagctgctgtgtgcaattttcttcaacatcttaa  
gttccatcttaagaatataacaaaatgatttcttataaaacttactgcattattcaaa  
atctttaaaaattaattgctcttatactattttttaaatctaaactataaaccattt  
ctagatacaattttagcaaaagttaataggataaaagtgaattaattatcagcaattca  
aatgatgtaacaaaaggaagctgactaaagatgaaaaacaaacagaactgtcttaatt  
ttaatttatgaattaaaaagtttaaacccagggatgaaactaagcagtttctccctga  
gggtatctgaaattcaggatggggaattctaaacacaacctgtacctgaatactagctac  
tattttaactctcacacttcaaattcaagccaccatggaacaagttttattctgcctta  
aactacaataaacttacctggaacctctccataaattgtaa

>IGR1171a

agtttaaaccagggatgtaactaagcagtttctccctgagggtatctgaaattcagga  
tggggaattctaaacacaacctgtacctgaatactagctactattttaactctcacact  
tcaaattcaagccaccatggaacaagttttattctgccttaactacaataaacttacct  
ggaacctctccataaattgtaacatctgtcaggcatactttggcactttcttctcaggca  
ttattgtaccaagagtgtttctgttctctatgtcgttcttaggcgctgtatgtctc  
tattgacattctgcagttgtttcttaattctggtatttcttctccttcaaatcaatta  
tgctttgcctaaatagaaaacacaattaaaaataaagtatctgatgtttctcacagttag  
actgaggttatgtatttttaggaagaataaccacagaagtgcattgtgttctttcaggg  
tatcatatcagtggtatggaatcatgatataaatgtcttattactgatgatgtaaat  
ccttattcacttggttagatgggtgttgccagggttctccactgtaaagtactgtttt  
agcttttgtaattaacaagtatcttaggagagaaatgttgagactatgtaaatatcttgc  
ttctcaacttctgcctactgatttttagtatccactgaca

>IGR1172a

gaatcatgatatcaatatgtcttattactgatgatgttaatccttattcacttggcttag  
atggtgttggccaggtttctccactgtaaagttactgttttagtctttgtaattaacaag  
tattcttaggagagaaatgttgagactatgaaatatcttgccttcaactttctgcctac  
tgattttagatccactgacagatcttgcttgaataattattactgtgggtttgtcaa  
actgagaaatattctactaatgaactggcatattgacaaaaagtgttaaggtcatgaaa  
gataaagacagattgttacagactgcaggagcctaaggagaaataacaactagatgctac  
gtgggatcctgcatggaacctgaaacagaaaaggcattgatggaaaactgctaaattc  
gatatggtctgtaatttagttagtagcattatatcaatgttaatcctggtttgataact  
gtattataacagagtacataaattgttaacatcaggaggagctggatgagggatataat  
gaataattgtattttttataattttctgtaatcctaactattttcaaaataaaaa  
tttttaattacaggaaaaaaagggaaggaagccagccactaagtgaatgctacatggg  
ttaaggtacaaaatgtcaacccattttactgggtactcac

>IGR1173a

aaattgttaacatcaggaggagctggatgagggatataatgaataattgtattttt  
tataattttctgtaatcctaactattttcaaaataaaaaatttttaattacaggaaa  
aaaaggaaggaagccagccactaagtgaatgctacatgggttaaggtacaaaatgtca  
accattttactgggtactactactgtagctaatgaattaccacctccatggcaggtact  
gacaactattttgctgatgcctctgaaacaataatgtatttaacttttaaaaaaaa  
tttacttcagaaatattccaaattctattttaaaattatattgaattagtatgacaaagc  
agtagaataaataaactgggtctctaataggagtcttattataaacttaagaataacca  
gaaactcaagtggtcttacttaattgatttttaaaaaatgaaactatgaccaagaatg  
ccaacctgacctgtggcaacagacctatagtttttaaaatttttaattattttat  
ttttatgctttaagttctgggatacacgtgcagaacgtgtgggtttgttacataggata  
cacgtgccatggtggttctgctgcacctgaacctcatctacattaggtatttctcct  
aatgctatccctcccctagccccccaccagcagacaggcc

>IGR1174a

cagacctatagtttttaaaatttttaattattttatttttatgctttaagttctg  
ggatacacgtgcagaacgtgtgggtttgttacataggtatacacgtgccatggtggttg  
ctgcacctgaacctcatctacattaggtatttctcctaactgctatccctcccctag  
ccccccaccagcagacaggccccagtggtgtgatgtccctccctgtgtccatgtgct  
ctcattgtcaactcccatttatgagtgagaacatgcaatgtttggtttctgctcctgt  
gttagtttctgagaatgatggtttccagcttccatgtccctgcaaggacatgaac  
tcaccttttatatggctgcatagtactccatggtgtatatgtgccacattttcttat  
ctagtctatcattgatggctatttgggttgggtccaagtcttctgctatcgtgaacagtgc  
cgcaataaacatatgtgtgcatgtcacacctacagtttttttataccacagaaatagg  
aggtatttattccacataataaatatgaaggtatgcagggtatgagtaattccatgcc  
aatgttctcttgaacactgttgcacagattagtagttggccttaattatgtgcca  
atatctaaaaagtgcacacgctatgacagcctaataatga

>IGR1175a

catgtcagacctacagtttttttataccacagaaataggaggtattgtattccacat  
aataaatatgaaggtatgcagggtatgagtaattccatgccaatgttctcttgaacac  
tgttgcacagattagtagttggccttaattatgtgccaatatctaaaaagtgcaca

gctatgacagcctaataatgatggccaagcattattaaactggggacatctctgtgaag  
aactgtagggtatacatacaattttaaccctattttacatttctacacacacacaaaa  
tctttcatcaatatgggtcaggttttggtgccttctttttgatgattacataagatgtt  
aaaagaagtttctggccgggtgtgacgggtcacgcctgtaatatgagcactttgggagg  
ctgaggctggtgaatcacctgaggtcaggagtcaagaccagcctggccaacatggtgaa  
accccatctctactaaaaatacaaaaaatcagttgggcgtggtgaagggcgccctgtaac  
ccagctacttgggaagctgaggaagagaactgcttaacccgggaggtggaggttgag  
tgagctgagattgtccactgcactctctgggttgttttcttttttaaatatga  
cattttattttttttcaagagttaattttctcacga

>IGR1176a

tacaaaaatcagttgggcgtggtgaagggcgccctgtaatcccagctacttgggaagctg  
aggcaagagaactgcttaacccgggaggtggaggttgagctgagctgagattgtccac  
tgcaactctctgggttgttttcttttttaaatatgacattttattttattttc  
aagagttaattttctcacgattcacaggttttttaaaatttttcaatagataaatc  
ataattgcaaacatttatggggtacaatgtgatgttctgatatatgtacacaatgcacaa  
tgattaaataaaggtaatttaacataccattaccctgcctatcatttttataga  
cagacatttgaatttactcttggatttctgttttccagaaactcaattcacctattt  
ttagacaacattccttttctaaggggattgtgtgtaaaaagggtcacacagatatggtac  
tgaaaaaaacctgtgggagaaataccaattgagtttgcatttaaatgaggtgctataata  
aatgaatctgagtcagtagacaaaatgataaacaggtacatttcagctgagatctc  
agtcatgatgttaggttatattagatactggcgaatttgaggctttaaataaaaatatt  
tcccgaagaagataagcaagatatggctccctacc

>IGR1177a

aaataccaattgagtttgcatttaaatgaggtgctataataaatgaatctgagtcagtag  
tagacaaaatgataaacaggtacattttcagctgagatctcagtcagtaggttta  
tattagatactggcgaatttgaggctttaaataaaaatatttccgcaagaagataagc  
aagatatggctccctactacctctctgagctcatctccacaacttttcccttggcctt  
cagggtcaaatatgtctcagagattttgcactgcctagaatattcttctatggacaactg  
catggctgactccctcacttctcctcaagttccactccactgccacttcatcaagtccc  
ctctaccacccttcagtagtccctattcccttattctgtgtagtttttcaatgcc  
ctgatcatccctggcatattatatttacttattgtcatccatctctccctactgg  
gatataaacctcatgagggcagggactttgtccatttgttactgctgtattacctgca  
ctccagtagactgcctatattggttgcataatagacagttctcatgtagtggtggcat  
caagggcatattctaaaggtgaaaaagcaaatggtgcacagataaatttaattgttac  
ttacccctcttcaccaataaccttccacctaaagtacta

>IGR1178a

cagggaactttgtccattttgttactgctgtattacctgcactccagtagactgcctata  
ttggttgcataatagacagttctcatgatagtggtggcatcaagggcatattctaaagg  
tgaaaaagcaaatggtgcacagataaatttaattctgttactttaccctcttcaccaat  
aaccttccacctaaagtactatcataaatagacctccacaatgtctctgaaagtacccc  
acgggatatttgaaagtagtatcctaaccagaggtggaaggaagcttaatgatcatgtaa  
atcaatccctcactttacgtgggggatacgaaggcccaaatgggttaagtaacatccct

aaggcaccagcagagtggaattgaagcaacctgactgcactcttaggcaattgct  
tccccatatttaaaaaaaaaaagtcctcttggttgggcattggtggttatgcctgtaa  
tcctagcactttgggaggctgaggtaggaggattgcttgagcttaggagtcgaggcttc  
gatgagctataatcaatcacaccactacactccagcctgggtgacaggagcaagacccta  
tctatcaatcaatcaagtcctcttaattcattattgaccttcatttgaggattattha  
aacttaaaaaaagtggtttataatgtatttcctactatt

## &gt;IGR1179a

tgaggtaggaggattgcttgagcttaggagttcgaggcttcgatgagctataatcaatca  
caccactacactccagcctgggtgacaggagcaagaccctatctatcaatcaatcaagtc  
ctcttaattcattattgaccttcatttggtgattatthaacttaaaaaaagtggtt  
ataatgttatttcctactattgggaagaagacttcctctctcatttgccaaactc  
cttctccagtttccagaatggccactgacattctgttagagcttgctaaacaacagg  
gggtcatcatttcctgctctcgggtctcaagtttggttctttataaaaaatgggtt  
cctcacacatgtgtcctcacttagcagccctgccagcatcttggtccatttcagtgc  
cctgtaggcctttctagcttcaggtctcttaaaatgtgtgtaaccagccatttacct  
ggctaacctagctgagccagtcacccatgaaacctgaaaaactaatcactgcgagac  
agtttgagggggttgttacaagcaatcaataacgggaatagacactacagttctcatt  
cattcagcaaatagttatcaaaagtacaatatagaatatacaaatgtgtggtgcctagt  
ctctaggttaaccagaatggcacacagatgctactgcagat

## &gt;IGR1180a

agtcacccatgaaacctgaaaaactaatcactgcgagacagtttgagggggttgtt  
acaagcaatcaataacgggaatagacactacagttctcattcattcagcaaatagttatc  
aaagttacaatatagaatatacaaatgtgtggtgcctagtctctaggttaaccagaatgg  
cacacagatgctactgcagatatagggttaggcagattcaagtcagccacaagtactcg  
acactcttccatcaagagatacagtatcctccctcactgaatctgggagttctgtga  
ccactctaaccaacagaaaaaagtgccatgccagtttcttggtctaggccttaaa  
ggacttgagcttctacttcctgttcattggaatacttacccttaggatactctgttagt  
aaccagtcactgtgtgccaaaagcccaagacgcagagggccatgtgaagatgtcc  
tattttgacagccccagctgagctccagacaatagtgagcatcactgtcagtcattga  
gccatcaagaacatccagctcggttatgctttgagacgactgcagccaacatctgactgc  
aaccgtaagaccccaagtgaagccacctagctgagccagtcataccacagaacctatga  
aaaattattgtgagacagatttgaggtttgttacatagca

## &gt;IGR1181a

gagctcccagacaatagtgagcatcactgtcagtcattgtgagccatcaagaacatccagc  
tcggttatgctttgagacgactgcagccaacatctgactgcaaccgtaagaccccaagtg  
aaagccacctagctgagccagtcataccacagaacctgaaaaattattgtgagacaga  
tttgaggttgttacatagcaataaataattggaacagacattacagttctcattcatt  
agcaaatagttatcaaaagttgcaatatacaaggaactgtggagatacaacgagtaagaca  
tgcaccttactcttagaggggaaactgtggccagcacggtgggtcacgcctgtaatccc  
agcactttgggaggctgaggcagggcattgcctgaggtgaggagtttgaaccagtcctgg  
ccaacatggtgaaacctctcttactaaaaatacaaaaaaattagccgagcctggtga  
cgtgcgcctgtaatccagctacttgggaggctgaggcaggggaattgctgaaccgggg

agggtggagattgcagtgagccaagactgcgccactgtactccagcctgggcgacaaagca  
aaactctgtctcaaaaaaaaaaaaaaggagccgtgatagctagggtcctaaaaataata  
cgatgttaatttctgccatttattgtataacagtctaaca

>IGR1182a

ctacttgggaggtgaggcaggggaattgctgaaccggggaggtggagattgcagtgag  
ccaagactgcgccactgtactccagcctgggcgacaaagcaaaactctgtctcaaaaaa  
aaaaaaaggagccgtgatagctagggtcctaaaaataataacgatgttaatttctgccat  
ttattgtataacagtctaacacagaactaagctcataatttctactacgtgtactttctac  
caatttcaaattttatccatttgatctttttctttcaagatactaccttattcctctcc  
ttcctttttattctcaaactactgcctctgtctcctcatctctgtggcccaataatctg  
gtttccaccttgatgcttgtgttggtattctattgttgcataacaaagtatccaaaac  
ttagcagcttaaaataacagcacttattatttctcagagatataggatcaagagatacg  
cttctgactcagggtctcgcatgaagtcgcaatcaagctgtcagccaggactgcagtcac  
cttaaggcttgactgtacaaagtctgcttccaaactcacttgcacaaaggcctcaggtc  
cttggcataatgggcctctccagagggtgcttgcaacatggcagctagcttcctcagac  
aagagacagaggggagacagagtgagtgaagagggggagga

>IGR1183a

catgaagtcgcaatcaagctgtcagccaggactgcagtcactttaaggcttgactgctac  
aaagtctgcttccaaactcacttgcctcaaaggcctcaggtccttgccatatgggcctctc  
cagaggggtgcttgcaacatggcagctagcttcctcagacaagagacagagggagacag  
agtgagtgaagagaggggagggagtgggggagagtgaagcagtcacacaagggtacaagca  
cattgcgagaacagaagaagccatagctaccttaataacctaattgttgaaaggccatgc  
tatcactctgctctgtttatcagttatataagaccaatcatgcaacagcatgagatggga  
ctatacaagagtataaataccaagaggccgagattactaggggaccatcttagaagtggc  
tgccacaaaccacatctcttaggcctttcttctcctttctgaaactcctccttggt  
tttcaggacaatcacttcaactctcctggttttctgcttctgagcttttctcagcct  
gtttcagtcataatattaatattagattaatttctaaaaatacatcttcaactaactcc  
cttaggttggtcctcatcacctatcagagttacaactagacctgaatataatgtagccc  
tatctcccaacatacaggactcaatccctataaataatt

>IGR1184a

cactctcctggttttctgcttctgagcttttctcagcctgttcagtcataatattaa  
tattagattaatttctcaaaaatacatcttcaactaactcccttaggttggtcctcatc  
acctatcagagttacaactagacctgaatataatgtagccctatctcccaacatacagg  
actcaatccctataaataattcccaaaactccagataacatttctactgcagcataggctc  
atactcctcttccctttgcaccgtgttctgacttccgtctcctctcagttgagctgaatg  
aacttctcaggtcttatattccttctcctgcctcattctcaaaatattcttctcattct  
gtatccattggctcctccttcttacctaacacatctgttgatcatttttaagcact  
ttattaagcctagctttctaaatgttgaaattctgagagcttgtcttcttaacagacat  
tagctcctggagggtcatgtcttaggtctctggcactagcctgttctctatgttctggg  
agacactaaggcaatcatcacatatttctgacttgattttgttgtaaacagaacata  
acacgaatttctgtataagtgtggaaaataaacaaccgaaatcatctatgattca  
ttcttttagcaagtggaaaagacattaaaaacatagtta



>IGR1185a

tcttaggtctctggcactagccttggtctctatgttctgggagacactaaggcaatcatc  
acatatttctgacttgattttgtttgtaaacagacataacacgaatttctgtataa  
gtgatggaaaatataaacaaccgaaaatcatctatgattcattcttttagcaagtggaaa  
agacattaaaaacatagtttaaaatctgtcttctgggagaactttcaataactaaattc  
tttgctgggttcagaaaagtgcatgtcaacagacagtcctaaatctgtgaaaatctatg  
cccacaagctaagtcctgggaattaaacacacatacaaaaagaacgtaagactgtgtcta  
cctcatagtttaagaaataagcttactggctatgcacgggtctcacacctgtgatccag  
cactttgggaggccgaggtgggccaatcactttgaggccaggagctcgagattagcctgg  
ccaacatggtgaaactccatctctactaaaaattacaaaaattagctgggcgtggtggta  
catgcctgtaatcccagctactgaagaggctgaggcatgggaatcgcttctgggaggtgg  
aggttgcaatgagccaagatcatgccactgcactccagcttaggtgacagagagagactc  
tgtctcagaaaaaaaaaagaaaaagaaaaaagacaggaa

>IGR1186a

tcttactaaaaattacaaaaattagctgggcgtggtggtacatgcctgtaatcccagct  
actgaagaggctgaggcatgggaatcgcttctgggaggtggaggttgcaatgagccaaga  
tcatgccactgcactccagcttaggtgacagagagagactctgtctcagaaaaaaaaaag  
aaaaagaaaaaagacaggaacaagcttatctttaacaaaataattgaatcttctat  
catagaagtgatataagacagggcataccagctcagagtccttactgagtaactaccatc  
tgcccaggcatgagatgggtaccttttacaatgtgctgctacatgtacagtgaaggtaaa  
tcccattctacctcatgggcacaagtcccagcatttcacacgccgcttttcttttt  
tttagctctgattctgttgacttgagtttatctggagcaagtcgcagtttagactgcaa  
tactgatgacttcttgaactcagcctctgtctgaaaaactctctgacaacggggcaa  
catgactggtttctgtctgtagctgagtaatgaactgggagtaaaactgctgtggctcca  
gccagcatggctattttaagaaaataaattatcaccaatgagaaaaaacataaaata  
cagtattctgaatacgggtgtatcttttctataaatata

>IGR1187a

actcagcctctgtctgaaaaactctctgacaacggggcaacatgactggtttctgtctg  
ttagctgagtaataaactgggagtaaaactgctgtggtccagccagcatggctattttaa  
gaaaataaattatcaccaatgagaaaaaacataaaatacagtattctgaatacgggt  
gtatcttttctataaatatgattattcttgctttataaatatattataaaagaaata  
aaaattctgatatttaaaattccgatattcgcttccaaagagcatgataattcagattt  
gtataaatatttttggtaacacattataagtataacaaaatgcctactgagagctttct  
atgtgccaggcactgttctaagggtttataattacaatctcattcacacctcagtagca  
caggtggtagttgtgtcctcattttatagacaatgaaacacaggaaggtttcagtaactt  
gcctaaagtcacacagtgaagtgtagagccaggactgaaatccaagccattaggt  
ccataaccagggttttaattccccatccttaacagttacctgtgaatgaaattcaaag  
gtgtcaaagtatcctgataataaagtagacaactacctcgctgtttgatgatttt  
caatttctctttaagcctgtctaaatcatttcaaaatc

>IGR1188a

gtaagttgtagagccaggactgaaatccaagccattaggtccataaccaggtttttaa  
ttcccacatcctaacagttacctgtgaatgaaaattcaaaggtgtcaaagtatcctgata

atataaagtagacaacttacctcgcgtgtttgatgattttcaatttcctctttaagcct  
gtctaaatcactttcaaaatcctggctaccacaacatcaaacagcttgcttcgtaact  
ggacaactgctcttcctttcttttagttcattatttatgattttattctgctcaga  
tgaagctagttccttgctaaaataagagcaaatatggatttcattttaaaataggagaa  
attagttgaaaatttgagtaggcaaaaacaagacaattctgccaacaaatcatgacaa  
gagtttggtatgaccaataaatttttcagaagtgagggactagtccacttctgcctt  
aactcctcccctaggaactgactcacctgccagtcctactcatgggcctgctcccagaa  
aaatgtacacagaattctgcctggttctgggggtcatggctttgatcccaggttaag  
cctcagcaagatgcttgtaggactattggacagaaagaagacaagagaacatccccgta  
attcccttagtcctttcacaataactacttcttactct

>IGR1189a

tgactcacctgccagtcctactcatgggcctgctcccagaaaaatgtacacagaattctg  
cctggtttctgggggtcatggctttgatcccaggttaagcctcagcaagatgcttgc  
aggactattggacagaaagaagacaagagaacatccccgtaattcccttagtccttca  
caaatactacttcttactcctgtaaaactgtttctttgtatcctccccctccttg  
ttgctgtcatcaacttgcgtccagatcagtcattccctctcattcatcaaagattttgct  
tactagtacaatttatccccactttaattcttaaacatcactcctagccaacctcaatact  
cacacataacatggttttcaatttgcaggttagatgcattagctaccatgtaatcaat  
ttaatgtattcagcatatttttaaaaatgaacagaatagacggaatataattggagta  
ggctgtatgtatatgtactactttgagaaattgtttcagataaattgtgtgactgcac  
acatgcttctcatcatgactaccatcctgagtcacagtaaacatttgaaaaaagtaa  
ctaatatgatgatatttcatatcctagactcccttgagcacttctcatcaagatcacc  
atgacctaagtccaagtacagtcttcatcttactctac

>IGR1190a

actttgagaaattgtttcagataaattgtgtgactgcacacatgcttctcatcatga  
ctaccatcctgagtcacagtaaacatttggaagaaagtaactaatatgatgatatttc  
attatcctagactcccttgagcacttctcatcaagatcaccagtgcacctaagtccaagt  
acagtcttcatcttactctacctctacgtacacaaacactgttgaccttctccttgaa  
gactattttcccaaggcacctgacaccacagctatctggctctcaccctggttccctgg  
gcacatcccagtttcttacttgcctctttcctttgcctgctaacaatttaaatgttt  
gtgctcccaggaatctaattgtaactccttcccttgcataactctctcaaggtgacat  
actaatgactttgagtatcccttacatagcaacaactccaatctcctgaatttcaaact  
ccaatattgtattccctcacagatacttcacagaacacagattaaacaccaccaag  
ccaagtcccttacttctcaaaaatctgtgtggaattttgacccgcttatccaacca  
ctatccaaggtaacatctgagaaacatgatcactttttataatggattactcacagaaat  
gaaaaatagaatttttaaatcttcataggtctaca

>IGR1191a

cagatactccacaagaaacacagattaaacaccaccaagccaagtccttactttcc  
tcaaaaatctgtgtggaattttgacccgcttatccaaccactatccaaggtaacatctg  
agaaacatgatcactttttataatggattactcacagaaatgaaatagaatttttaaat  
tttaacttcataggtctacaaattttcaagggacaagaggcctaaattactatccggtta  
ccattttacttaatttgcaaaaatagaggggtcttcaaatgttcatggaaatgtgtat

tataaaaaaactatgcatgaagttcaaaatgtttgactgaaacaaactcatactaac  
ttgttataacatgtctgaataggatctagttaaggcactaacaaggttaagacatcagt  
ttgaaaagagccccaattaaactgaagcaagaacaagtatcaaatttatggtgaagtg  
ggtggaagaatggtgaaatcattgatactttacaacaagttatgagatcaatgccccaa  
acaaatcagcagtttacaatggataactcagtttaagaagggatgagacgatattaaag  
atgaagcccacagtgcagactgttcacatcaattgtgaggaaaaaaatcatcttctt  
catgccctaactgaagaagatcaatgattaacagcagaaa

## &gt;IGR1192a

cattgatactttacaacaagttatgagatcaatgccccaaacaaatcagcagtttaca  
atggataactcagtttaagaagggatgagacgatattaaagatgaagcccacagtgcag  
actgttcacatcaattgtgaggaaaaaaatcatcttcttcatgccctaactgaagaag  
atcaatgattaacagcagaaacaatagccaacacatagacacctcaattgattcaggt  
acacaattctgactgaaaaattaaagttgagtaaacgttctacttgatggatgccccaaa  
tactgcttcagatcagctgcagacaacagcagaacttctcaataagtgggatcaagt  
tctaaagcatttctcaagaattgtaacaggagggtgatggaatgtggctttaccagta  
caatctgaagacaaaagcacaatgaaagcaatggctaacaagtgggtggaagtggccagt  
caaagcaaaagcagaccagataagagcaaaggatggcaacagttgttggggatgctca  
aggcattttgcttgcactttctggaggccgaagaaaggtacaactgcttattatga  
gagtgttctgagaaagctagccaaagcattagcagaaaaatgccaggaaagctcacca  
gagagtcctttccaccacaacaatgttctgctcatcc

## &gt;IGR1193a

ataagagcaaaggatcaggcaacagttgttggggatgctcaaggcattttgcttgcac  
tttctggaggccgaagaaaggtacaactgcttattatgagagtgttctgagaaagcta  
gccaaagcattagcagaaaaatgccaggaaagcttcaccagagagtcctttccaccac  
aacaatgttctgctcattctctcatcaacaagggccatttgaagagttcagatggg  
aatcatttaggcacccattacagtcctgatttggctcctctgtcttctagtcttcta  
atcttaaaaaaatctttaagggcacccattttatgctagcaatgtaaaaagactaca  
ctgacatggttaaatcccaggaccctcagttctttaggactgaactaaattgctggtat  
cactgctcagaagagcttgaacttgatggagcttatgttgagaaatacagttatttaa  
aatttttatctttaattccattttccatgaacttctgaagtctcctgtatgtaaga  
actaaagttatcaatataacataaccatttcagacaataaattatttaaaacaattaa  
acaggtgaagcatgaaataagagatttctattacatctccaaatgttgcaacttactcaa  
tttggcaagtctgtccctggctgattaattctttgat

## &gt;IGR1194a

cattttccatgaactttctgaagtcctctgtatgtaagaactaaagttatcaatata  
acataccatttcagacaataaattattttaaacaattaaacaggtgaagcatgaaataa  
gagatttctattacatctccaaatgttgcaacttactcaatttggcaagctgtccctg  
gtctgattaattctttgatttactatgtagccagcttcaagctgtttttgttggga  
aaatatcccaacagtgaaggttaattcatcactgtgcctagattttattttctgattgt  
tcatctttgtcagcctataggtaaaaaaatcttttaaaataaagctatatctcca  
cattatatcaagaacaaaaataaattctagactgactaaagtctaaagcttaaaactata  
aaaatatgaaaataaaataaatttctaaagttctaaagcttcaagtggggatgg

tctttctaagccttaagagtgaggtagccaagtcgaacaatataaaattttaaaatttggtg  
tatgttaaagttaacagtaaatgtgcatgtgtgtatatacatatatacatatttctgtat  
taactttttgtaattaaacaataacttttaagcttgaaagtctattatagagtactaa  
gctcacttagcctctaaaatatagtcaataccaacttaat

>IGR1195a

tggagtagccaagtcgaacaatataaaattttaaaatttggtgtatgttaaagttaacagt  
aatgtgcatgtgtgtatatacatatatacatatttctgtattaactttttgtaattaaac  
aataacttttaagcttgaaagtctattatataagagtactaagctcacttagcctctaaaa  
tatagtcaataccaacttaataccttatagtctatgacttatgagtgaaggtaggctat  
tttaagtagcagacagtataaattagaacaaaaagaaaatcatactttgtctttggtcag  
catctccatttgggtacgtgtgtgtgtatgatggttaactgctccatctcctggtaag  
ttacgcagggtcctgtctaagctgcttttcattttggagacttattactccatttt  
taaggtttctacattgctgtttttctcagccttgcttaactcacgttcttagtcaataat  
tcatacaaatgcaaagggtttatattttgtgcaagaattaaaataatgacaaagtgtg  
ttagaaattaactactcctcagaatgttccaaatattactgtttgcatccaacaagagaa  
aaaaacataaggcactatatactcttaaggtatattcttattaaagtgaccttactatgt  
tataatggtagagaattagtaaataaacctagaagggtca

>IGR1196a

ttatatattttgtgcaagaattaaaataatgacaaagtgtattagaattactactcct  
cagaatgttccaatattactgtttgcatccaacaagagaaaaaacataaggcactata  
tatgctctaaggtatattcttataaagtacacttactatgttataatggtagagaattag  
taaataaacctagaagggtcaaacaggaaagaaatgtgagaattactgtaaattaggag  
acatgtgtctaagtagcacagattagtgagtcctcagtcacaattaaatatttattatgt  
ccccatgtaattcactatattgcctgggtatgtagaactataaaaatagtgtgatgtgt  
ccctgaccaagtatctccccacccaacaagacaacactgatgaagtgtactgacaa  
aaatgtatgctacaatgggtgagttatggagcaaaaataaatgtttacataaattatcaag  
atgggctttaagaagtttgccatgctttagaatgcttactttgtaattggagatgtgaag  
aaggaggacagactagaagcaagaaagaaaatatggaaatcctgaaaagattggctaag  
aaagtttttaacacagaaaaagtaataatacagcaaaaatcatctagaattacaacgtgt  
gtgacctagaggaaaaacttgctttttaaaactttgg

>IGR1197a

ccatgctttagaatgcttactttggtaatggagatgtgaagaaggaggacagactagaag  
caagaagaaaatatggaaatacctgaaaagattggctaagaaagttttaacacagaaa  
aagtaataatacagcaaaaatcatctagaattacaacgtgtgtgacctagaggaaaaata  
cttgcttttttaaaactttggcaagtgctttttcttttttgagatggagtcccact  
ctgtcaccaggttgagagcagtggcgcaatcttggtcactgcaacctctgcctcca  
ggttcaagcgattctcctgcctggcctcccaagtagctgggattacaggcacacgccac  
cacgccagctaattttgtatttttagtagagacggggttcacatgttggtgggaca  
ggtcttgaactcctgacctcacgttatctgcctgccttgcttccaaagtgtgggatt  
acaggtgtgagacaccgcacccggcctggtaagtgttcttaataaggtgtcataagaa  
ttagccagttttgtgtgtttgaatgtacatttctatgccccattctcagagattttga  
tttgaagggtctgaagctttaaggtctgagtacagtatcttataaaagctccctatgtga

ttctaattttcaggctatcgggtttagaaccacaaagagtc

>IGR1198a

cccggcctggtaagtgttcttaatcaagggtgtcataagaattagccagttttgtgtgt  
tttgaatgtacatttctatgccccattctcagagattttgatttgaagggtctgaagctt  
taaggcttgagtacagtatcttataaaagctccctatgtgattctaattttcaggctatc  
gggtttagaaccacaaagagtcagaagatcaagatattcagatgaattcattttacatgag  
aataagacaaagtgatgtttttataaaatgctataatcttaggatcaaaaatagacaa  
aatacttctaaaagtattatcttataaaattattagattattcaacaatatcttacagc  
ttttatgagctcctgggtccagttcaagaatcctgtctgaagatccttccaactgctgtaa  
ttcatacttcacattttcagctcattctgcttcttacttaggatttctgattttaactc  
aattattcttcccagtcagttttcttcttcttctatctcatctatctgtttttgttcag  
agtctctttttctgcaaagtcattctaaatgcataatgtaaagaatgagcattaataatt  
actaaacaatttaagtttttaattgcaaaggaatatgtactgaagaaaatacaa  
aaaagtacagtcgtgtgtgtcagcaggatattcca

>IGR1199a

gttttcttatcttctatctatctgtttttgttcagagctctttttctgcaaag  
tcattctaaatgcataatgtaaagaatgagcattaataattactaaacaatttaagttt  
ttaattgcaaaggaatatgtactgaagaaaatacaaaaaagtcagtcgtgtgt  
gtcagcaggatattccaagaatgcataaggcaattttatcattgtgtgaaca  
tcagaatgtattacataagcctacatggtatagtttaatacacacatagactatatggt  
atagcctattgtttatgggctacaaacctatacagcatattactgtactgaatactttgg  
caactgtaacatgatgataagtattatgtatctaaacatatctaaacacagaaaacata  
cagtaaaatacagtattataattttatgggaccaatgtcaaatatgtggtctatcactga  
ccaaaacatgtggttcaagactgtattttaaaaacaatcaaaaccattaccagagataa  
tcattaactgtgagcaaagtgtttctctgcaattagttttaaaaattttactttaaac  
caaataaaaaatgtaggtttacattttctcatattttatctttatacacttaagaaca  
tttgcctcaataaagggttttctgccttgtagcagatttt

>IGR1200a

actgtattttaaaaacaatcaaaaccattaccagagataatcattaactgtgagcaaat  
gttttctctgcaattagtttttaaaattttactttaaaccacaaataaaaaatgtagggt  
tacattttctcatattttatctttatacacttaagaacatttgctcaataaagggtt  
ttctgcctttagcagattttatcctaactaataagaaaaatagccaaatggagtc  
aaccacaaatataaaacaattcaagtagagaatatgatgcaacacaaataacaaactgt  
atttcaaaatacttgccatcagttggttggcagttttgcttcccttctgtctctc  
tcacaagttgtgaaaattttatctgtctttcactgaatgggtccacgctcaaagccat  
ccaattctagctgtgttgccaaagactgaattaatgaatctctagctcggatatgttctt  
gatggcgatctgctgcagctgtgacgaccttttaaaaaaaatctcataatttttt  
ttcaactggtgcttaaaaagttgagatagctgcagattcacgagtataaaaaataatgc  
agtgtgtctctgtacattttgccagtttctccaatgataacattttgcaaaactgca  
gtaaaatatcacaaccagaatactgatattgatataattc

>IGR1201a

ctgtagacgaccttttaaaaaaaaaatctcataatttttttcaactggtgcttaaaaa  
gttgagatagctgcagattcacgagttataaaaaataatgcagtggtctctgtacatt  
ttgccagtttctccaatgataacatttgcaaaactgcagtaaaatcacacaaccaga  
atactgatattgatataaattcatcaatcttattcaaatttcccaattttattgtaccc  
ctgagcatgtgatgtgtgtatattaagttctatataatttatcacctgtgtcggtca  
tataccactatggcagtcagataactgaacagttccaatactacaaggactctctttt  
gttctaatacataaccatacctagctccctcctgtcctttctcttaccagtatccctggc  
aaccactaatttctccactatttctaaaatttgacattataaaaatgttatataaatgg  
aaacatactgtgtatagccttttaagattggctttcactcagcataagtccttgagat  
tcttcattcacacagaaaatgtataacatcatagtaggaaaaacgaccaaataaacattt  
tgtctacctgttcaacaagcagttctgattttctgattgagaagcctagattcttt  
atttagttttccagttcacgatgacagtctaccaatttc

>IGR1202a

tttaagattggcttttactcagcataagtccttgagattcttcattcacagaaaa  
tgtataacatcatagtaggaaaaacgaccaaataaacatttgcctaccctgttcaaca  
agcagttctgatttttctgattgagaagcctagattctttatttagttttccagttca  
cgatgacagcttaccaatttcttcttctccctactgttctctggtgattgtgatat  
aagtcatttagtgcctcagtccttgaaaaacctgtgtaacaccaaataaaaagct  
ttaatgtacaacataagaaaatatgatcatttgaggatcaaatataaaccaaacctt  
attcaataccttcatttaacatatacatagaagtaacaagatctgtattgtttttt  
ccaatgtggatggcaaaatggattcaaataaagtcattacaataatccaaaatttga  
agcagaacaaaattctaccaccacaaaccttttccatttctcttccagttcactattat  
ctttctccatttgctttctcggtatccaaggctttaatttcattgtcaagttcatta  
tttagagagattatgtcaatttcttttagacgattctgaaaataaagaaacattacat  
aaataaaactcactatagcttacatggctgatagatgaag

>IGR1203a

accacaaaccttttccatttctcttccagttcactattatcttctccatttgcttctt  
tcggctatccaaggctttaatttcattgtcaagttcattatttagagagattatgttc  
aatttcttttagacgattctgaaaataaagaacattacataaataaaaactcactatagc  
ttacatggctgatagatgaagacaagtaagatactccaggtccaggcatttagtaaaagt  
gatctcatttaaggtaacaataacactgtagagcaggcctagagaaactgaagttcaga  
gacattaagtaacttgcccaagtcctcacagctagtagagagaagcaggaattaaattc  
catttctaactccaaacaccatgtctgtcctcaacacctgccacaaaagtcattattca  
ttcattgggcatttagagtacttaactcttaaaaaggttaactatttaattgtattttt  
aagtcaggactactgagaaggctagaaattcatggtgagttaccaatgcattctgagcct  
ataggcaaattfacatgaagagtatactttaatccaaagcttgctcaaccacagaggact  
ctgagcaagtaagtacaacaaggagctcagtggcctgtctgaggctcgttccagag  
acagctggttgctcatctcccaggaatactgggatctgg

>IGR1204a

ggctagaaattcatggtgagttaccaatgcattctgagcctataggcaaattfacatgaa  
gagtatactttaatccaaagcttgctcaaccacagaggactctgagcaagtaagtacaa  
caaggagctcagtggcctgtctgaggctcgttccagagacagctggttgctcatct

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

cccaggaatactgggatctggttcggggcattctcttattggatgatgctggggatattc  
ttctagtgttgcctctatgattccaaaactgaccaactctcttctaagacattttac  
aacctacttttattattattttcaaatgcagagacaaggcttctgtatgttgcctgg  
ctggagtggctattcacaggtgcaataacagtgaatacaactgaactcctgggctcaa  
gtgttctctccacctcagctccaagtagctgagactataagtatgtaccaccatgccc  
gcagaacctaattttaactaacatatgaagttattggaatgcttagacagcaattgcaa  
gctttcataattgcaccaaataatgcctcctgactttaacataatttataaaattatact  
aatagtatagcttgtgattgtatatgaacgtaaacgttcatacaaatgaacctaaaa  
acagaaactttgttactttgtccctaatgtatccccag

>IGR1205a

taacatatgaagttattggaatgcttagacagcaattgcaagcttcataattgcaccaa  
aatgcctcctgactttaacataatttataaaattataactaatagtatagcttgtgatt  
tgtatatgaacgtaaacgttcatacaaatgaacctaaaaacagaaactttgttactt  
tgttccctaatgtatccccagaaatgcaataggtgttcaatgttagctaaacgaaagag  
agattgaaaaaataattttaccaagagcaacagtcacaggtatcactgattgaatgtc  
tgctatgtccagacactgtactaggtgctgtataaattctcttaactcctcaciaaag  
tatataactaagcaggaaattcaaaggacttaactgacttgtacaaaattgtatagttaag  
attgggagacaagataacaataagattagaaggcagggtatcataatgactaggctctgg  
gtgctagaagaagtggacatttgtatgaagaaagtaaacctcaactttacctcatatc  
atattaagattctgaaatgaagcatatacttaattgtaagaactcaactataaaacttt  
tagaggaaaacactgaagaatattttgtgacactgggtcaaagacttctaataataa  
acaaaaagtataaaccataagagaaaaaagtattataaact

>IGR1206a

tttgtatgaagaaagtaaacctcaactttacctcatatcataattaagattctgaaatg  
aagcatatacttaattgtaagaactcaactataaaacttttagaggaaaacactgaaga  
atatatttgtgacactgggtcaaagacttctaataataaacaacaaaagtataaaccata  
agagaaaaaagtattataaactgtacctgatcaaaatttaaaactcctgtcctctgaaaag  
cagttaagaaatatctgcaaaaccaatatctgataaagggtgtatccagaacatattt  
agaactctctgcctggcactgtagctcacactgtatcccagcactttgggagactgag  
gcaggctgattgcttgagcccagaagttgagaccagcctgggtaacctggtgagacctt  
gcctctacaagtctcaccggtgtggtgagtggtgctgtagctccagctacgtgggaga  
ctgaggtggaaggatcacttgagcctgggagtcagagggtgcagtgagccaagatcacac  
cactgcactctggcctgggtgaagacagcgagaccctgtctcaaaaaacaagaaaaaaaa  
aaaaaaaaaagaactctcacagctcaataataaaatgaccaataataataaacattga  
aaaataggcaaaagacttttatattttactaacgaagata

>IGR1207a

tgagcctgggagtcagagggtgcagtgagccaagatcacaccactgcactctggcctggg  
taagacagcgagaccctgtctcaaaaaacaagaaaaaaaaaaaaaaaaagaactctc  
acagctcaataataaaatgaccaataataaaataacattgaaaaataggcaaaagacttt  
tatattttactaacgaagatattcaggtggcaataaatacatgaaaagatgctcaaat  
caataatcaattgactgatcaactaggaaaacacaaattaaaaataaaagaatacaac  
ctcacaatgtcacaatgagacactaccaccccctactgttatggctaaatgaaaaaga

ctgacagtactaagtggggatgagaatgcagagcaattacattcccataaattgttgta  
tattgttggttaggactatgaagtgggtaccagatgggtacagccatctggttaactataagg  
ttaaacatatattaccacacgacctagcaacccgagtcctaaagttatccaaagacctg  
tatacagaagttatagcagttttatctgtaacaacccaaagccgaaaacaacttattc  
ttttattatactttaagtcgagggtacatgtgcacaacatgcaggttgttacatatg  
tatacatgtgccatgttggtgtgctgcacccattaactcg

## &gt;IGR1208a

acgacctagcaacccgagtcctaaagttatccaaagacctgtatacagaagttatagca  
gttttatctgtaacaacccaaagccgaaaacaacttattctttttattatactttaagt  
tcgagggtacatgtgcacaacatgcaggttgttacatatgtatacatgtgccatgttg  
tgtgtgcacccattaactcgctcatttacattaggtgtatctcctaatgctatccctcct  
ccctccccccaccccacaacaggaccagtggtgtgatgttcccttctgtgtctgtcca  
agtgttctcattgttcaattcccacctatgagtgagaacatgcgggtgttggtttttgt  
tcttgcggtagtttgctgagaatgatggtttccagcttcatccatgtccctacaaggac  
atgaactcatctttttatggctgcatagtattccatggtgtatatgtgccatatttc  
ttaatccagctcatcattggacatttgggttgggttctaagtctttgtattgtgagt  
agtgtgcaataaacatacatgtgcatgtgtctttatagcagcatgattataatccttt  
gggtatataccagtaattgggtgagctgggtcgaatggtatttctatttctagatccttg  
aggaatcgccacactgacaaatgggttctaattaactaa

## &gt;IGR1209a

ttggacatttgggttgggttctaagtttctattgtgagtagtgctgcaataaacatac  
atgtgcatgtgtctttatagcagcatgattataatcctttgggtatataccagtaatg  
ggatggctgggtcaaatgggtatttctatttctagatccttgaggaatcgccacactgaca  
aatgggttctaattaactaaagagcttctgcacagcaaaagaaactaccatcagagtga  
acaagcaacctacagaatgggagaacattttgcaatcaactcatctgacaaagggttaa  
tatccagaatctacaaagaactcaacaaatttacaagaaaaaacaacaccccatca  
aaaagtgggtgaaggatataaacagacacttctcaaaagaagagatttatgcagacaaca  
gacacatgaaaaaatgctcatcatcactggccatcagagaaatgcaaatcaaaaccacaa  
tgagatatcatctcacaccagttgaatggcgatcaataaaatcaggaacaacaggtg  
ctggagaggatgtggagaaagaggaacacttttactgttggagggactgtaactagt  
tcaacaaaaacaacttaattgtccatcagccacagaatggatgaggaaaaaattataat  
acatgcatacaatggaaggatgtcctccacaataaaaa

## &gt;IGR1210a

agttagaatggcgatcaataaaaaatcaggaacaacaggtgctggagaggatgtggagaa  
agaggaaacttttactgttggagggactgtaactagttaacaaaaaacaacttaa  
tgtccatcagccacagaatggatgaggaaaaaattataatacatgcatacaatggaagg  
aatgctcctccacaataaaaaggatgaattgccgggcacagtgggtcacacctgtaac  
ccagcactttgggaggccgaggtgggcagatcatctgaggttgggagttcgagaccagcc  
tgaccaacatggagaaacccgtctctactaaaaatacaaaaaaattagctgggtatgg  
tggcacatgcctgtaatcccagctacttgggagggtgaggtaggagaattgctgaacct  
gggagacggagggtgcagtgagccgagatcatgccattgcactccagcctgggcaataag  
agtgaactccgtctcaaaaaaaaaaaaaaaaaaagggaatgaattactcacacatgcag



-251-

caacatagataaatcccagacacaaaagtctgcatactgtatgattctatatatgtgcca  
ctctctggaaaaggcaaaactataatgacagaaaacaaattagtggttactatggatggg  
agcaggggagaggactgactgcaaggactttgagagaact

&gt;IGR1211a

aaaaaaaaaaaaaagggaatgaattactcacacatgcagcaacatagataaatcccag  
acacaaaagtctgcatactgtatgattctatatatgtgccactctctggaaaaggcaaaa  
ctataatgacagaaaacaaattagtggttactatggatgggagcaggggagaggactgac  
tgcaaggactttgagagaacttttggagtactgaaatattctacatcttcattttagt  
gatggttatgctactgtatgcatatgtcctaactcatagaatttatactctaaaaagggt  
ggattttaccatatatatattataccttaataaacttgacttaaaaagaaaaaagggtat  
aaacttaggaatcagaggactcaaatcctacctttaacccttattccactgtgaatacc  
tgtacctcagtttctgcctatacaacctcacagtactatggagttacattatacat  
tttaagcactcgggttagtggtaggcagtaaacattcaattaatgagaccatttgcacc  
acttgtaaaaaaattctgtactcagaaaatacctttgagtagagttaacaaatataa  
ctggatggatacttaagagcaatgaatactaacagctctactatgatactctacaaagt  
ctcagtttcttccatcagtgtttctacgtcctcttggtgta

&gt;IGR1212a

tgtaggcagtaaacattcaattaatgagaccatttgcaccacttgtaaaaaattctg  
tactcagaaaatacctttgagtagagttaacaaatataactggatggatacttaagag  
caatgaatactaacagctctactatgatactctacaaagtgtcagtttcttccatcag  
tgtttctactgcctcttggtagcacaaacattatgataatcatctgggcttggatcttcc  
atgacatctctactgtcttcttcttaaatccagccagtcaccagatcccctgaattcc  
ttctttgacatctgtgttttgggttctaactcagagcacaaaacataggttctatcccca  
gagtacacacctagtaaaaggagctaggacaagcaggcagacaacaataacaaaaacagc  
caagggtttaagccttaggtgccagtgtgaaatgagataaaaaaataagagcagctgggc  
tatcaagtatagaaggaccatgaacttgtgtgcagaaaaaaaagttagaacatatcc  
tctagcaattccatttaaggcaagaaaggaaaacagatctaagtaggccaaaaaagag  
gacaggatatggtgggatggtataaaagtagttatgagagagtgaagttcccgaagat  
aaagggaatcagtaaaaatgggaaaggatgcattctagt

&gt;IGR1213a

atgaacttgtagcagaaaaaaaagttagaaacatattcctctagcaattccatttaa  
ggcaagaaaggaaaacagatctaagtaggccaaaaaagaggacaggatatggtgggatg  
gtaataaagtagttatgagagagtgaagttcccgaagataaagggaatcagtaaaaat  
gggaaaggatgcattctagtgcattggtgaaaggacgtagcttttctgggaagggtgatt  
tgacccaaacttaattgggttctatgaagggaagaatcttcacatgtcagagctaaaaa  
aaaggactttggaagtcactacttaataaacattattgaaccacctgtatgtgccag  
gcactaggctaggctctgaggatacagagaagaatattaaacccttgagaattactcac  
aattaaacacaaacaagtaataataacctcaacctctgctacagccttggttagaatct  
tggcaccactactaaatcctaggtattatcatttagccctaccttgacatcatttcaa  
tataaatgcttcatttcaacaatatggatttcttgacagtggtcaaagacagcttggat  
tttactgtctctatgtctcaatgacttactcatttatgatcaaaaaagtcattggccaaa  
ttcagtcctatgaaatcctctctgctacctcagatagaa

>IGR1214a

ctaggtattatcatttagccctaccttgacatcatttccaatataaatgcttcatttcaa  
caatatggatttccttgacagtgttcaaagacagcttggattttactgtctctatgtctc  
caatgacttactcatttatgatcaaaaaagtcagtgccaaattcagtcctatgaaatcct  
ctctggctacctcagatagaaattctcttcttctcctcagagctcctacaggtcttgt  
tttttctctgccttaccattacatgtgcttgcctctctccaaccaagatgctcctcaa  
gaaaataaaacgtggagtggggcaagggggaaagaagaaaaaaaaggaaatctgttcta  
atatcttggaattaccacgggaccacacagagttatcaggacaactatcctaaaata  
taacatagcttccactcttctgtctattgaactaagtctgaaatccattagctttctat  
aatctgaccccgattcatattggctcatttactcctttatattgatttacttaaccaga  
ctcttctctcataatcctgttctgattaagctttaaaggtaaatatgcacatacat  
aagtgaatgttgtatatacatatgtattgtatatagcagttaaaaaagttgcaggt  
aaatatactctggaaggtagagatgagaaatggaagact

>IGR1215a

ttggctatttactcctttatattgatttacttaaccagactcttctctcataatcct  
gttctgattaagcttgaaggtaaatatgcacatacatacaagtgaatgttgtatata  
catatgtattgtatatacgagttaaaaaagttgcaggtaaaatatactctggaaggt  
agagatgagaaatggaagactatcttttactttcacctaatactctttataactttt  
tactaggggcacatattacttttaaaagaaaagtcaaaataatacaaacatttccaggt  
gcggtggctcacgcctgtaatccctgcactttgggaggccgagggcgggcagatcactga  
ggtcgggaggtcgcgaccagcctgaccaacatggagaaacccgtctctactaaaaatac  
aaaaaattctatttttttttttagccgggctggtggtctcatgctgtaatccca  
gctaccctggaggctaagtgggagaattgctgaacccgggaggcagaggtgcagtga  
ccgagatcgtgccactgcactccagcctgggcaacaaaagtgaactccatcctaaaaat  
aaataaataataatacaaacatgtataaaatgtcttctagtgtgacttgatttct  
tccattctcaaggccacctcagccctacctctctcca

>IGR1216a

gggagaattgcttgaacccgggaggcagaggtgcagtgagccgagatcgtgccactgca  
ctcagcctgggcaacaaaagtgaactccatctcaaaaataaataaataaataaca  
aacatgtataaaatgtcttctagtgtgacttgatttctccattctcaaggccca  
ctcagcctacctcctccagaagccctgcaatatattctatgcatggccatcatta  
aaaatatatatatttctacttcatgattcaaatctatactggtatttacaggtga  
gttttttaaaaacaaatcaataaatttttaatgactttaaaaaatctactatctaaa  
catagcaaatagccattttaagaatgctcttatttagactaggaataccttaaggacag  
gggtgcagttgtagtctcttctgacccaagcacagtataccctggtacaaagaagacac  
ccaataaatgcttattaaatgaatgaatggaatttctgtaggcctttctataaatcac  
cgggttgagggaaggtatactattgcaaatatgaacatgttatggatcaattccaaa  
ttctgtgcaattttgaatgcttcaaaaactttctgcaatttttaaaaattctctgaaa  
gatgtcaatttttaaaaattataacagaactgtaaggt

>IGR1217a

tgaatgaatggaatttctgtaggcctttctataaatcaccgggttgaggaaggtatac  
tcatttgcaaatatatgaacatgttatggatcaattccaaattctgtgcaattttgaat

gcttcaaaaactttctgcaaattttaaaaattctctagaagatgtcaattttaaaaat  
attaatacagaactgtaagggtgggtaatgatattgctatttaacacctagtgtatata  
ctactaatttagtgtgatgctacaaattgtttctttcaaatccaagctcttcagcaa  
tttaaagactaacatagacctaaaacattagctccctgataattcaagaaatatacaagc  
cattcagtttcatatacaataaggggagaatgctactatagcaaaaaaggactaccta  
tttagtatacaagaaattaactactgtacatcactgtgacttttagttaataacaatat  
aattgctaagagagtagattttaagtgttcaccataaaaaaattgaagtaataaacgt  
taaatagcttgatttagccagtcacgatgtatacttatcaaaacatcatgctgtata  
ccataaagatatacaattttgtcaattaaaaataaaatcaagttaccttcaatggatca  
agttcattctcataggatttgacaatttcctttgaagatg

>IGR1218a

tttaagtgttcaccataaaaaaattgaagtaataaacgttaaatagcttgatttagcc  
agtccacgatgtatacttatatcaaaacatcatgctgtataccataaagatatacaattt  
ttgtcaattaaaaataaaatcaagttaccttcaatggatcaagttcattctcataggatt  
tgacaatttcctttgaagatgttaactgggcttccttacttgtaatctgatcacgaatct  
cacaagcttttcttataattgcttcagatatttagttccatttgataattctttactt  
tctgaccttgtgtcgtacgtacctgccgaagtgttctaaggctttaatgtatctttgaa  
gatatgaaacaaaaatcaaatttctggcgaagtaattatggtatatattcatacagtgg  
gatattatgctgtcactaagattacagttacaatgagttttaataacttgtaaatgcc  
tatgcataatggtaagtgaaaaaattacatttatactgtcaatcaggtaaataaatat  
acgcacagaaaagacaagtgaagaaaatatgccaatggttgctgctggatgagaggtag  
taactgatgacctttctgcttttaatttttctgttaaaaagaagcatccaaattgca  
aacacagttcaataacttaatggactacaaagtctatta

>IGR1219a

aaaaaaattacatttatactgtcaatcaggtaataaatatcacgcacagaagacaagtg  
aaagaaaatatgccaatggttgctgctggatgagaggtagtaactgatgacctttctgc  
ttttaaatttttctgttaaaaagaagcatccaaattgcaaacacagttcaataactta  
atggactacaaagtctatttaagggttacaaccttggtgctgaaaaatctcatcaaac  
tttggcttcaaagccttctcacttaaggccaattagaatcttctgatgacagaaa  
atgcattatttagcacagccttggaaccccaagagaactgatcattctcgggtcaatt  
tctgcacacttagagctcagactgacctttcaccatgcctacagaaaatgaaaatcaag  
aatatatgtaaaaataaccttcagtgtatctattctattgcttaataatcatactgtac  
ttctttaaaagaataaaaaaaaaggcccttcacctatcccgttagaaatggcttcatcat  
gctaaaaagtgttaactcttaactatttaacgggtcacagatgaaaagatatgtaaaaca  
aagtagttcaggaaaggaagccagaatttatttttacatatttgacttttaaatataa  
taatttagaatacttagagatactatagagcattaact

>IGR1220a

aaaaggcccttcacctatcccgttagaaatggcttcatcatgctaaaaagtgtactctt  
aaactatttaacgggtcacagatgaaaagatatgtaaaacaaagtagttcaggaaaggaa  
gccagaatttatttttacatatatttgacttttaataataaatttagaatacttagag  
atactatatagagcattaactgtcttaaaaaataagagacaaagaataaaaacaaacatga  
tgatcaatagcagacaggcaaggtaagttaaaaacatcttagaatggggttctttcttc

agtaacagactgctctggtgagcagaggcaatatctgtctttactgtttttatacat  
caatttgatattttaaataattacactgggccaggcacggtggctcatgtctgtaatccc  
agcaatttgggagggccgaggtgaatggatcacctgaggtcaggagtcgagaccagccag  
actaacatggtgaaacctgtctctattaaaaatacaaaaaattagccaggtgtggtgg  
tgggcacctgtaatcccagctccttgggaggtgaggcaagagaatcacttgaactcgg  
gaggttgcagtgagngagatnnnnncattgcactccagcctgggnnacnagnganac  
tcngtctcaaaaaaaaaaaaaaaaaaaaaannnnnagaaa

>IGR1221a

gtctctattaaaaatacaaaaaattagccaggtgtggtgggtgggcacctgtaatcccag  
ctccttgggaggtgaggcaagagaatcacttgaactcgggtgaggttgcagtgagngag  
atnnnnncattgcactccagcctgggnnacnagnganactcngtctcaaaaaaaaaaaa  
aaaaaaaaaannnnnagaaaaaaatnnnatnntgaatntntaagnnngnttgcaga  
gggntnnaatagacacagataaatcaataggtatcacatgaggtcatggaagacaatg  
gtagcttgactaggactagaatggtggttagagatggaacagattccagagacatt  
tagattaaattcataggtctcagtaatagactggatatggaaggcaaagacatatcaaga  
cttaggtcttggctttgtcactggacggatagtggtatcattcaccaaggtgaggtat  
accataagaccaagtgttgagggtttttaaggggggaggtcaaagagaaaggactgag  
tttggtttgaaacgttgaacctaaagtgtcttgaacaactggtaaaaaaatcaga  
gatggggctgggcgcggtggctcacgcctgtaatcccagcacttgggaggtgaggtgg  
cggtatcacgaggtcaagagatcaagaccattctggctaa

>IGR1222a

ggaggtttttaaggggggaggtcaaagagaaaggactgagtttggtttggaacgttg  
aacctaagtgtcttgaacaactggtaaaaaaatcagagatggggctgggcgcggtg  
gtcacgcctgtaatcccagcacttgggaggtgaggtgggcggatcacgaggtcaaga  
gatcaagaccattctggctaactggtgaaacccatctctactaaaagtacaaaaatta  
gccaggtgaggtgtgacgcctgtatcccagctactcaggaggtgaggtcaggagaat  
cgcttaaacccgggagcgaggtgtcagtgagctgagattccactgcactccagcc  
tgggtgacagacagagcaagactccatctcaaaaaaaaaaaaaaaaaaaaaaatcag  
aaatgggtaaataggtctgggtaaatgggtctggaacagaggtctggtttgagatatg  
acataaatctgtgagctcatatgaacacagagtagttgagcaatggataagaatgtga  
ttacctaggaagaaaatacagagcaaaaaaaggagaagatacaggactgagcctaata  
gacttccaacctttattgatgggtgaaatgaagtagtatgtagctgtgatagaaagagag  
aacagtattgtatcatggaggtctagaaaaagaaatttc

>IGR1223a

ctatgaacacagagtagtttgagcaatggataagaatgtgattacctaggaagaaaatac  
agagcaaaaaaaggagaagatacaggactgagcctaagagactccaacctttattga  
tggggtgaatgaagtagtatgtagctgtgatagaaagagagaacagtattgatcatgga  
ggtctagaaaaagaaatttcaataaaaaagtaataaactagcattacttagctatggt  
acatggaacaatggtcctcaagatgtccacatttaatcccttgaattgtgaatgta  
cattgcacagcaaaagagaattaagattacagatggaattagggtgttaatcatttgacc  
ttaaatagactatcctggattatttgatggggcaaatgtaatcacatgggtccttaa  
tgtgagagaggaaggcagaagaagagagaagaagaggtcacagtattgatagagaag

aactctgcccactattgcttgctttgaagacagagtaagaggcatgatctaaaaatat  
gggtggcctctaaaagacggaaagaacaaggaaacatattctcccttagagcctccagaa  
aggaacgtaaccctactaacatcttgattttagcccagtgagaccaattcagacttcta  
aactacataagtgtgaagataataaatttgattgtttata

>IGR1224a

tgctttgaagacagagtaagaggcatgatctaaaaatatgggtggcctctaaaagacg  
gaaagaacaaggaaacatattctcccttagagcctccagaaaggaacgtaaccctactaa  
catcttgatttttagcccagtgagaccaattcagacttctaaactacataagtgtgaagat  
aataaatttgattgtttatagcactaagtttggtttcttatagcagtcatagaagac  
taatacatgaactcttactacatgttaagcattttatgcattagctcaacctgacaa  
catctaagatacacacagtgaaaatgaatgcctactttacaaatgaataaacagaggct  
cactcttaggtctactttgtatagcagcagcattaccctaattaaaaacagagttattag  
taacttttagtcagagggtgttcaaaggacgaatgggactgcaattggagtgaagaggagg  
tgaagaaatggagacagtatcaacaactctttgagagactggctataaaggagaagaag  
gagacaggtagtaactggagtggatgaaatcccagggtatgagagatacttgagtgtgt  
taaaatggcaatgatgaaaacctgcttgagaagccagtatagtcctccagcacatagta  
gatgtgcattattggttaataaaggaattacttagctag

>IGR1225a

tcaacaactctttgagagactggctataaaggagaagaaggagacaggtagtaactgga  
gtggaatgaaatcccagggtatgagagatacttgagtgtgttaaattggcaatgatgaaa  
acctgcttgagaagccagtatagtcctccagcacatagtagatgtgcattattggttaa  
ataaaggaattacttagctagttaaataaaaggaggagaagaagctgaatagtcaagta  
atttgctcaacaagacagagactgaatctaaggtagtctaatacccaaatccatatcc  
attagaaaatgatacctgcctctaacagaatgataatggttgaaaggaacaatttatcat  
tcttctacttgctgcttctcatctcacccattctaaacatgacactagaattttt  
actcattcaacctgtatttgagtattatgtgctttcaattcagcaactgttcagaaatt  
actcaagagaatggaacataaccctaagtctttcatgggatcattctatttaactgacaa  
atagtatccacaaaaaatcaaatgttcatagtggaggaggctgtgtgtgcgtgggggtag  
ggagaaaatggaagctcagtacttttgcctaatgttgcataaaacccaaaactgctcta  
aaaaataaagtctaaagtctattgaaaaaatttaatat

>IGR1226a

aaccctaagtcttcatgggatcattctatttaactgacaaatagtatccacaaaaatc  
aaatgttcatagtggaggaggctgtgtgtgcgtggggtagggagaaaatggaagctcag  
tactttctgcccattttgctataaacccaaaactgctctaaaaataaagtctaaagt  
ctattgaaaaaaatttaatatgctcccctaaactatagtagaaaacaacctcaactta  
cagacctaaaagactgaaaatgaacagaattcaaatatcatataaacacctactttgtt  
ctagtaatgactcctccagagttttaattctgtcttttgcctttctgagtacacacc  
atagatctttgcacagctataagttctcattgacatcacgaaattgcagacgaatctgg  
gctctcacatctgtttcttgagcaacctttgaaggaaaacacagaaaaacttatgttac  
tttaataagcaccagtggttggtctgagaaaaaggcataagcaatcttaccacaaatgag  
ggaacaaaaagaaaaacatccaaaatgagtgatattttacatgctatccaaaatataga  
agaatactgtttaatttaacaaaaatgatatactatctacctcttattcagcatc

attaggagatcaggtatgcagattttcaaataaatgaat

>IGR1227a

ggttctgagaaaaaggcataagcaatcttacccaaatgagggaacaaaaagaaaaacat  
ccaaaatgagtgataattttacatgctatccaaaatatagaagaatactgtttaattaat  
ttacaaaaatgatatactatctacctcctttattcagcatcattaggagatcaggtatgc  
agatttttcaaataaatgaattttatctctgtaagcatcaaaaatgtttttatccttaa  
aaattgcaagtttatagaaaggtagaatgatttggttctcttctcaccctaaatct  
catctgaattccacatgttgacaggaggtaccagtggaagtaattgaatcatgggga  
caggtcttcccatgctgttctgtgacagtgagtaagtctcacgagacctgatggttt  
ataagaaggagttccccgcacaagctctcttgcctgttgctgtccatgtaagatgtga  
cttgccctccttacctccaccatgattgtgaggcctccaagccaggtggaactgtag  
tccattaaacccttctttgtaaattgtccagctcaggtatattattagcagtg  
gaaaacggactcatacagtaaatggtaggaggtggagtgtgctgaaaagtatccg  
aaaatgtgaaagcgactttggaactgggtaacaggcagag

>IGR1228a

caccatgattgtgaggcctcccaagccaggtggaactgtagtccattaaacctttcttt  
tgtaaattgtccagttcaggtatatctttattagcagttgtgaaaacggactcatacagt  
aaattggtagcaggagttggagtgctgctgaaaagtatccgaaaaatgtgaaagcgacttt  
ggaaactgggtaacaggcgagaggatggaaacagtttagaaggctcagaagagaggaaaatat  
gggaaagtgttgaaactcctagagatttggtgaatggcattgacaaaaatgctgatagg  
atatggacaatgaaatccaggttgagggtgcttcagatggagataaggaactgttggga  
actggggcaaaaggtgactttgttatatttagcaaaagaaactggcagcattttgccct  
gccctaggaatgtgtggaccttgaaacttgagagagatgatttaggggtatcttggtgaaag  
aaatttctaagcagtaaaagcattcaagcgggtgacttgggtgctgttaaagggatgcagta  
ttaaagggaacacgataaaaagtttgaaaaattgcagcttgacaatgtgatagaaaat  
aaaatcccattttctgaggaggaattcaagccagctgcagaaaattgcataagtaacaag  
gaaccaaatgttaattaccaagacaataaggaaaaatgtct

>IGR1229a

cattcaagcgggtgacttggggtgctgttaaagggatgcagtattaaagggaaacagcata  
aaagtttgaaaaatttgcagcttgacaatgtgatagaaaataaaatcccattttctgagg  
aggaattcaagccagctgcagaaatttgcataagtaacaaggaaccaaatttacc  
aagacaataaggaaaaatgtctccaggggcatgtcagagaccttftgtacagccccctcca  
tcacaagcccagaggttaggaagaaaaaatagtctgtgggccaggcccagggtccctc  
tgctgtgtcgggtctagggacttgggtgccctgtgtcccagccacaactaaaagaagccaa  
gglacagcttggcctgttgcttcaaagggtggaagcccgaagccttggcagcttccacgt  
ggtgttgagcctgcaggtgcacagaagtaagaaatgaggttgggaacctctgcctaga  
tttcagaggggtgatggaacacctggatcccaggcagatgtttgctgcaggggtgggg  
cccttatgaaaaacctctgctagggcaatatggaaggggaaatgtgggggtgaaacccac  
agagttcctatggaggggactgcctagtggagctgtgagaagacagccactgtcctccag  
actggtagatccccagaataatagatccactgacagctt

&gt;IGR1230a

acacctggatgcccaggcagatgtttgctgcaggggtggggcccttatggaaaacctctg  
ctagggcaatatggaagggaatgtgggggttgaaccccacagagttcctatggagggga  
ctgcctagtggagctgtgagaagacagccactgtcctccagactggtagatccccagaa  
taatagatccactgacagcttgcactgtgcacctggaaaaactgcaggcactcaacacca  
gcctgtgaaaacagccaggaaggaggctataccctgcaaagccagaagtggagctgccc  
aggccatggaagcccacctcttgcacagagtgcacctggatgtgagacatggagtcaaag  
gagatcattctggagctttaagatacacctgccccactgaatttcggactgcacggggc  
ctgtagccccctttgtttggccaatttctccatttggatggctgtatttggccaatgc  
ctgtatccccattgtatctaagaagtaactaacttgcctttgagtttacaggcgcatagg  
cagaagggacttgccttatcttgggtaagactctggactgtggacttctgaattaatgct  
aaaataagactttgggggactgttgggaaggcatgattggtttgaatgtgaggacatg  
agatttgggaggggccaggggtggaatcatatggtttggc

>IGR1231a

aagaagtaactaacttgcctttgagtttacaggcgcataggcagaagggacttgccttat  
cttgggtaagactctggactgtggacttctgaattaatgctaaaataagactttggggga  
ctgttgggaaggcatgattggtttgaaatgtgaggacatgagatttgggaggggccagg  
ggtggaatcatatggtttggctgtgtctccactcaaatctcatcttgaatccccatgtgt  
tgtgggagaaaccaggtgggagataattgaatcacgggggcaggcttttctgtgtgtt  
ctcatgataagtaagtcacgagatctgatggcattataaggggggaattttctgcaca  
agctctcatttggccaccatgtgagacatgacttccacttccaccatgattgtgaggcct  
ccccagccacgtggaactgtaagtccattaaacctctttctttgtaaattgccagctct  
tgggtatgtctttaacagcagtgtaaaatggagtaatacacagaactacagtatacata  
gttttctgcccccaaacacatgagagtaagttgctgatctgatgtcccaacaccagt  
atttctacaaaacaaggacattttcaacaacaaaaatcaggaaactgatactgatatat  
tattaccacatggtccacaaatcccatcaagttttgcca

>IGR1232a

agtgtgaaaatggagtaatacacagaactacagtatacatagctttcctgcccccaaac  
cacatgagagtaagttgctgatctgatgtcccaacaccagtatttctacaaaacaagga  
cattttcaacaacaaaaatcaggaaactgatactgatatattattaccacatggtccaca  
aatccccattcaagttttgccagttgttccaaaatgtgataagttaccattaactcagctg  
tggcatataaaataatggttctccaaagatgtccacattctaacccttgaatttgtgaa  
tgttacattacacagcaaaagagaattaacattacagatggaactgggggtgcaatcact  
tgactttaaatagaaagattaccctggattatttgaatgaggcaagtatctacaaaaa  
gttagatgctgatagtagaggaggttgtgtgtgtacaggcagggaatatacagaaactgt  
actttctgctcaattttgctataaacccgaagctgatctacaaaataaagttaaagtct  
gttgaaaaaaatttaatatgctccctaaagtagtagaaaatgaccatcatcttataaga  
cctaaaagaccaacaatgaacagacattcaaatatcatataatcacctatttttctgat  
gtcttctgcttatattaatatggtcacttcagcattctt

>IGR1233a

tataaacccgaagctgatctacaaaataaagtttaaagtctgttgaaaaaatttaatat  
gtcccccttaaagtagtagaaaatgaccatcatcttataagacctaaaagaccaacaatga  
acagacattcaaatatcatataatcacctatttttctgatgtcttctgtcttatattaa

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted April 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

tatggtcacttcagcattcttttcattagctggcacggtatattttccatcctttgt  
tttaaaccatctgtactattatataaaaaactgtattccttttactttatttagg  
gttttttggttattgtcctccatttttctcatgtttttttttatgtttttttatat  
ctatgaacatagttataagattataataagattttaaggttcttatctactaattctat  
catctattcatccctagggtacttctgtggatgccttcctcactcagtcctacctaagg  
cttttggaactgaattaatcaggaatgaataactatccattagttatgctgagagtt  
tttatcatgaatgagtattaaattgaaaagcttttctgtatctattgatgctcatatga  
ttttctcttttattctattactgtggcaaattatactgattgtttttctttttctac  
agcctaattcacttgtcccagtagctccttttagagcaaaa

>IGR1234a

aggaatgaataactattcatccattagttatgctgagagttttatcatgaatgagtatt  
aaattgaaaagctttttctgtatctattgatgctcatatgattttcttctttattctat  
tactgtggcaaattatactgattgtttttctttttctacagcctaattcacttgtccc  
agtacgtccttttagagcaaaaggattcagttcagaattacactttgtatttggtggttat  
gtctctttactttttcagcctgaaatagttgctcagattttccttgactttcatgact  
gataattttgaaaagtagacaccattattttgcagaataacctcccaaaatttggttaata  
tttctcagactagaatcagggttatgtatcttttggaagaatattatacaagcgatgat  
gagttccttttactgcatctcatcagacaggacatcatttccatttatctcattacggag  
gglttaacttcaatcccttttattttttttgagacagggtctcactttgtcatccag  
gctggagtgagtggtgcatgaacacagctcactgcatccacgacctctgagtcataagcaa  
tctcctacctcagcccccaagtagctgggactataggtgcatgccaccacaccccgcc  
aattttttagtatttttagagatgtggtttaccatgtt

>IGR1235a

ttatttttttttgagacagggtctcactttgtcatccaggctggagtgagtgagtgatg  
aacacagctcactgcatccacgacctctgagtcataagcaatcctcctacctcagcccc  
caagtagctgggactataggtgcatgccaccacaccccgccaattttttagtattttgta  
gagatgtggtttcccatgttgccctagactaacttcaatctcttgataaagggtgatctc  
ctagcttcacaaaaaatttttcttacaattaattaataatttgaggggagagatgcaga  
gaccatacaactatctcatacttcatcaaaactttcttcattagttttagcatctactgt  
ttcttacctgaatgaattattattatgacagctatcaaatagcgcataccccatcttat  
tgtgtctctcagagggtttgtggcaacctgcatctaacaagtcctatcggtgccattttc  
caacagcatgtgtcactttgtgtctctgtgtcacattttggttaatttcacaatattc  
aaacttttcattattattgtatctgttatagtgatctgtgataagtgatctttgatgtt  
actactgtaattgtttgtgtgccacaaccatccacatataagaggtgaacttaatccat  
taacgtgtgtgtcctgactgcttactgacctgccattcc

>IGR1236a

tgtgtctctgtgtcacttttggttaattctcacaattttcacaactttttcattattatt  
gtatctgttatagtgatctgtgataagtgatctttgatgttactactgtaattgttttg  
tgccacaaaccatccacatataagaggtgaacttaatccattaacgtgtgtgtcctgact  
gctttactgacctgccattcccgtctctctcctctccttggaaacctgattgcctgagac  
acaataatatggaaattaggccaattagtaacctacaacagccctaagtggttaagcg  
aaagaagagtcacaactctcgttttaaatcaaaaactagaaatgattaagccttagttgag



aaaagcatgtcaaaatccaaaacaggttgaaagttaggcctcttcatcagttagctgag  
ttgtgagggcaaaggaaaagtcttgaataaaattaaaagtctactttagtgaacacac  
aaatgataagaaagtgaacagccttactgctgatatggagaaagtttagtagttggga  
tagattaaaccagccacaacattccctcaggccaaaacctaaccagagcaaagcccaa  
ctctctgcaattctatgaaggctgagagaagtaaagaagctgcaaagaaaagtgggaagc  
tagcaatggttggttcattgaggttaagaaaagaagctgt

>IGR1237a

cagccttactgctgatatggagaaagtttagtagttgggatagattaaaccagccacaa  
cattccctcaggccaaaacctaaccagagcaaagccccaactctctgcaattctatgaa  
ggctgagagaagtaaagaagctgcaaagaaaagttggaagctagcaatggttggttcag  
aggcttaagaaagaagctgtctccacaacataaaagtgcgaggtgaagcagcaagtgt  
gatgcaggagctgcagcaagttatccagaagatctagctcaggttaattgatgaagtagc  
tacactaaacaacagattttcaatgtagacaagaccgccatccattagaacttaacctgc  
aatatctaagggtatgcctatagtaattttctagtccattatccttttatattagttaa  
ggttctagtataaggggctttgctcttttccattccccccatttctgtatcagt  
ataaactcatagattccttacttgggtccaatccccaccaggctgtcacagcttggtt  
ttgtggatgccttctcactcagccacacctaacggattttggactgaattattcaggaa  
ttaatattcctccatcagttatgctgaggggttttaccacgaaagactattaaattgaaa  
tgcgttttctgtatctattggtgttcattgatatttctt

>IGR1238a

actggggtccaatccccaccaggctgtcacagcttggtttgtggatgccttctcac  
tcagccacacctaacggattttggactgaattattcaggaattaattcctccatcagt  
tatgtctgaggggttttaccacgaaagactattaaattgaaatgcgttttctgtatctatt  
gggttccatagatatttctttttattctgttaattgtggcaaattatactgattgggtt  
cttttctaccgtatctcttaagcattatctagctgcacccacataattttacatgcta  
tatttttgattcatttaaagtatttttctaatttcccttgatgattcctttttgatcca  
tghtaattttagaagtatgctgcttaattttcaattattggggattttccggatactt  
ttctgctactgattctggttagtcacagaatacattatctatgactttactccttataa  
atttattgacacttggttacagtccagaatgttggtctatcttacagaatgtccacat  
gcacttgaaaataaagtgtattctgctatcgttcaatggaatgtcctataaatgtcaatc  
aggttgatttggttaacagtggtgttaaaatttccatatacttactgatatttcatctg  
cttcttttctactgagaggggtattgagatctccaatt

>IGR1239a

acagtcagaatgttggtctatcttacagaatgtccacatgcacttgaaaataaagtgt  
attctgctatcgttcaatggaatgtcctataaatgtcaatcaggttgatttggttaacag  
tggtgttaaaatttccatatacttactgatatttcatctgcttcttctactgaga  
gggtgtattgagatctccaattgacctgcagatttgtgtatttctccattctgttcata  
gggttctgcctcatatatttgaagttttacatttagaattttgtgtccttgcatataa  
ttgaccttctcctacataaaatgtttcattttccctagttctgatgtctctgtctggt  
attaatatggctcacttcagctttcttttcattagctggcacagtatatttttcaatcct  
tttgcttttaacctatttgtaccattatatacaaaacaccattattccgtttatttgggt  
ttttaaaatttttccatttttctcattatgcttatgttttctttatatctatgagca

bioRxiv preprint doi: <https://doi.org/10.1101/2025.10.25.1025002>; this version posted October 25, 2025. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

tatttataagagttataataaggttttagggttcttactactaattctattattcttt  
catttggatctgttcataatgattgattttctctgattatgggtcctatttccctgctt  
cttggatgcctgttaacttttgattgtgaattttgtatt

## &gt;IGR1240a

ttttctcattatgcttatgttttctttatatctatgagcatatttataagagttataat  
aaggttttagggttcttactactaattctattatttcttcatgttggatctgttcata  
tgattgattttctctgattatgggtcctatttccctgcttcttggatgcctgttaact  
tttgattgtgaattttgtattgttgggtgaaagattttgtttattcctttaatgagtac  
tgaactttgttctggcatgcagtaagtttttgagcaacaacagttggattcttttga  
accttggttgaaggctgtaaagggggacctagagcagcttttactctaggactaatt  
tacaatcattttcgacattttccttcagcctcaaaaactttctttaacaattactatagt  
gcaagcctgtctgaacaaattacctctaccattttgttttaaatctgaaaaatgtcctcc  
attcacctccaattttcaaagaatattttgctggatataaggagttaacttttatcc  
ctagcaccttaagggtgctgtcccactgtttcaggttttagattgcttttctaagaagt  
aatcatactcattattcttccctctgcatgatgtgttacttttctccacctgtttt  
aagattttatatttagtttgaacaatttgaatgtaatgt

## &gt;IGR1241a

aagaatatttttctggatataaggagttaacttttattccctagcaccttaagggtgct  
gtccactgtttcaggttagattgcttttctaagaagtaatcatactcattattctt  
tccctctgcatgatgtgttacttttctccacctgttttaagattttatatttagttt  
tgaacaatttgaatgtaatgtacaacatagttatgtttatgctgctgtgatgcattcag  
cttcttgggtcttttttatagtttttattactctgttagatgtcttccacacattat  
gtccacttttctttaagtccttgagcttatctatcatagctttaaaaaatccggctg  
ggcgtcgtggctcatgcctgcaatcccagcactttgggaggccgaggcaggcggatcaca  
aggctcatgagttcgagaccagggttgctaataatggtgaaacccgtctctactaaaaata  
aaaaataaaaaataaaaaatcagccgggcatggctgtgggcacctgtagttccagctac  
tcgggaggctgaggcaggaaattgcctgaacctgggaggcacagggtgcagtgagccga  
gattgtccactgcactccagcctgggaaacagagtgagactccatctcaaaaaaaaaaa  
tttaaaaaaatttaaaaaaaatccttgtctgctaattc

## &gt;IGR1242a

atcagccgggcatggctgtgggcacctgtagtccagctactcgggaggctgaggcagga  
aaattgcctgaacctgggaggcacaggttcagtgagccgagattgtccactgcactcc  
agcctgggaaacagagtgagactccatctcaaaaaaaaaaatttaaaaaaatttaaaaa  
aaaatccttgtctgctaattccaaaatctgtcatctctggatctgcttactactctttt  
cccttctcaggtatagaccacattttcttttgcatttcccatttaatttttaaaattata  
ttctgcacattgtagatgccacattgagagcttcgactgagtaggcttctttaaagt  
cttgagtttgttctagcagccagtttaattactggcaactcagcttgattctatcaaaa  
cctlggttcagttattgttaggtgggcctttctgaggtctcaagtgaacactggagagtt  
ccacaaggctcactccattctggcacatcaggactcaaatgtctcacagcattgtgtgacc  
tttagaatacaacactcacagccccacttggcacttggtagttgttctactagccct  
cattaaatctcatctatacatggatagcttagtatttggccaaagactcaaaagatcct  
tatgcagatttctgtacaccatctctgcacaacaaccct

&gt;IGR1243a

tggcacatcaggactcaaatgtctcacagcattgtgtgacctttagaatacaacactcac  
agccccacttgccaccttggtagtgttctctactagccctcattaaatctcatcctata  
catggatagcttagtatttggccaaagactcaaaagatccttatgcagatttctggtaca  
ccatctctgcacaacaaccctacttcagtagctctgtctctacaatttccagtcactttagc  
aaatccaaaatcctatcttgtttcatctgcttagtgatgccaaattctgccagctctc  
tactggattccaattccatgtgccaaagttacaaaagtggtcccaggtagaaagctggaa  
tgaatgcagaatcaccttttatgtttctcctttctcaaagaatatagccctgcattatct  
gtggtccaatgcctgaaaatagttgtttcacatacttttccagtggtacagttattcatc  
ttgcgagtataagtgtagactcattattttgttgaacccaaatcacaaagtactggatt  
ctgctttaaaaaaaaaaaaatcattaagatcctttgctgactttttaatgacttcttggc  
atgaatttaactttgatactaattcaattaatcattcaacaaatattacaggcactttg  
taggtttcatgtgtgttttggttcaaacctgacagacttt

&gt;IGR1244a

actcattattttgttgaacccaaatcacaaagtactggattctgctttaaaaaaaaaa  
tcattaaagatccttctgctgacttttaaatgacttcttggcatgaatttaactttgatac  
taattcaattaatcattcaacaaatatttacaggcactttgtaggttcatgtgtgttt  
tgggtcaaacctgacagacttttttcccttgaagcatgaagataggttaaatgtagaca  
aggtgtgctaacaacacatcataagcacaggataatctgggagtacaaagcaggagcatct  
aacctatctaggacagctcagggaaggtagtctaagggaagtgaatgtttaaataaaact  
tctaccaatctgggtagaagtaaccagatgagaagatctgagtcactacgtgactacag  
aaatttcagaatgtttggcatagaaaagtagggaaaagaagagtatcaacctaaaatgttt  
cagaaattaacagccttctaacttggttaaggcttttggatttaagggtgatggcactaaa  
tggtttgaaccagggggaattgcatgaagtatgatatgcattttagaagaatttttgtct  
ttaggggtgaacagagtgaaactgagacaagacatgaagcagggaataatcaggagagata  
ggaaggcagcctggacaagggttgaggatggaggttaaaga

&gt;IGR1245a

aaacttggttaagacctttggatttaaggtgatggcactaaatggttgaaccaggggaat  
tgcataagtagatatagcatttagaagaattattttgtctttagggtgaacagagtga  
ctgagacaagacatgaagcaggggaataatcaggagagataggaaggcagcctggacaag  
ggttgaggatggaggtaaagaggaagaagtcgctgaactggctactcagaacagcctct  
taggatacagacatttcaatgaggaggtggccagaggtcagtataaagctttgaaagccc  
agacttgactctgtcatttcatcataaggagagcattctgctgaaggtttaatccacagt  
agttgaactaaggagctatgtatttatgcagcaaaaaattaatttgttacagtgttctt  
gagtagcaagccaaatacacatactcttttccatggcatctacttttcaggacctagc  
taccggcgaacatcaaattagtaaatagaattcaagcaagggtctatctttagtcatttc  
tactactacattgttggtgacactcttattgaagaagagtcacttcaaaagtgaagtga  
atttagattgaattattaaacaaagaaatgtgtattatacttcagaacaatttctatca  
aaaagaataaaaataaaaaataagaaaaaccccttcttctc

&gt;IGR1246a

tagtaaatagaattcaagcaagggctatctgtagcatttctactacattgtgttg  
acactcttattgaagaagagtcacttcaaaagtgaagtgaatttagattgaattattaa

aacaaagaaatgtgtattatacttcagaacaatttctatcaaaaagaataaaataaaaa  
 taagaaaaaccccttcttctccaaacaatctagttgtaaaaccattaggtggggcagaag  
 aaggtgcgtgtcatgccagctgaaggtaaggcacctataactcagcctagagtggaa  
 aaatgagcttgagtaggctgagaagggtaccctcatggggaaacagcttggcatagacag  
 agttcaagagtcgaatgggtatcagagttccagcaggatgaaagaggaatccacaaatag  
 gggggatccagctcagaagcagagtgccacgccagggaatagtgtggggattcagagcc  
 tgataatgatgagaagggggccacctgaggggtaagtgcgctagggggaagtcagatca  
 tagagtagagacggcattcttgaagaagccacctggtataaagtatcagactgagaaga  
 gtgacctctcagtgacacagatctggggagattcaggtcagagtacagtgggcatccct  
 gcaagaggccacctgggtatcagagaagggcggggaatgag

>IGR1247a

gccacctgaggggtaagtcggctagggggaagtcagatcatagagtagagacggcattc  
 ttgaagaagccacctggtataaagtatcagactgagaagagtgacctctcagtgacac  
 agatctggggagattcaggtcagagtacagtgggcatccctgcaagaggccacctgggtat  
 cagagaagggcggggaatgaggacatgatctagcaccagaagtcaaagtgtatacagaat  
 ggaaaagcatcccatgagggagtcagaatgaagagtcagagcctacgcaggataaggaa  
 gactggcatacagggatggagtcagcccatatgaggtgctagggccctgatgcaacgatg  
 agacattgattacatacaggaggattgattaagtcaatatattaagattatggttgata  
 aglacattcttgactgctataaaaaaaaaaacctgaaactgggtaacttataatgaaagg  
 aggtttaattggctcacagttccacatgctatacaggaagcaagactggggagacctcag  
 gaaacttacaatcatggcagaaggcaaaagggatgctggcacatcttacatggctggagc  
 agaagaaaaagagtaaaagggggaattgtgacagatttttaacaaccagatctcatgaga  
 atttactactatcatgagaacgaaggggggaaatctac

>IGR1248a

ttccacatgctatacaggaagcaagactggggagacctcaggaaacttacaatcatggca  
 gaaggcaaaggggatgctggcacatcttacatggctggagcagaagaaaaagagtaagg  
 gggaaattgtacagatttttaacaaccagatctcatgagaatttactcactatcatgag  
 aacagcaagggggaaatctaccccatgatccaatcacccaaccaggctccctcctgcaa  
 caagtctgcagacttctgctggacatccagacgttccatacatccctgaaatctag  
 gtggaggctccaagcctcaactcttctctgcgcaaccccaggcttaacaccatgtg  
 gaagctgccaaggcttacagcttgcagcctctggagcagcagcttaagatatctgggg  
 cccttttagccatggctggagctggagtggctgaaacacaggagtagtgtctgtaatg  
 ggaggggctgctgtaagatcttgaatgccttctagccattttcccagtgcttggc  
 tattaacattctgctcctcttacttatgcaatttctgcagccggcttgaattcctcc  
 ccagaaaatgggttttctttctaccacatgatcagggtgcaattttccaaacttta  
 tgctctgcttcccttttaatatataagttccagtttcagat

>IGR1249a

tctctgaaatgccttctagccattttcccagtgcttggctattaacattctgctcct  
 ctctacttatgcaatttctgcagccggcttgaattcctcccagaaaatgggttttct  
 ttctaccacatgatcagggtgcaattttccaaactttatgctctgcttccctttta  
 atataagttccagtttcagatctcttgcctgcacatatgagcatatactgctagaagca  
 gccaggccacatgttgaaagtttgcctggaaatttctccacaaatactctaaat

catctctttcaagttcaaagttccacagattcctagagcaggggcacaatgctgccagtc  
tctttgctaaagcatcgcaagagtacctttactccagttctcagtaagctccttatctc  
catctgagacctctcagcctagacttcattatcatatcactgtcagcattttggtaa  
aataatttaacaagtccttaggaagttccaaacttttctcatcttctgtctcttttg  
agccctccaaactgttccaacctctacccattaccagttccaaagtcacttccacatt  
tcagctatctttatagcaataccctactctcgggtaccaactttctgcattagtctgttt  
ctcactgctacaagaataacctgaaactggttaaagaaa

>IGR1250a

aggaagttccaaacttttctcatcttctgtctcttttgagccctccaaactgttcca  
accttaccattaccagttccaaagtcacttccacatttccagctatctttatagcaa  
tacctactctcgggtaccaactttctgcattagtctgttttctcactgctacaagaat  
acctgaaactggttaaagaaaagaggttaattggctcacggtctgcaggctgtacagg  
aagcatgactgcggaggcctcaggaacttacaatcatggcagaaggtgaagaggaggct  
ggcacatcttacacggccagaacaggaggaagagagtgaagggggagggtgtacacact  
ttaacaatcagatctcatgagaacttactatcacaagaactgcaagggggaaatccacc  
tccatgattcaatcacctcccaccaggccctcctccaacaatgggggttacaatttgac  
atgagatttgggcagatacaaatcaaacatctcgggtactcaattccttgccttctcatt  
accttcatagtatttaccaaatcccaaccatggataaatgcaactttccaattattca  
gtgcttgggctgaacaagactgaaaaacatacataaccatgatggctggtctcttta  
aatttcacaaaaccctgacactgtcatgtaatccaga

>IGR1251a

aaattcaaacatatcgggtactcaattccttgccttctcattacctcatagtattacca  
aatccccaaccatggataaatgcaactttccaatttattcagtgttgggctgaacaaga  
ctgaaaaaacatacataaccatgatggctggtctctcttttaattttcacaaaaccctg  
acactgtcatgtaatccagaacacctcccttaataatttacttactgaggttaaaaac  
tattctatgttttctaggtcaatcaacccttctgccactctcaaccagtaacttcat  
tctttttcatttgagaatataaaaagcaataaaaagagaacttactcattctttaccac  
taaagtttcaatcatataatctgcctaaatccctgttacaatggataacagtggatgt  
cctggatatccctccagttgggcaatggatcttatctcttttgcctactcaagaattgt  
gctctgtaattatccctctctctgcataatgtttctgtccagagtcattccaacagtc  
tacaatgctctagtatatccacttttaaaaacataaaaacaacaacaaaactt  
tctttatctgttaacctcttcagctactgtcctatgtctgtgtccacttacaacaaa  
ttcataaaataattctgttcaacttctttatctttctct

>IGR1252a

tcctgcatcaatgtttctgtccagagtcattccaacagtcataaatgctctagtatat  
cccacttttaaaaacacaataaaaacaacaacaaaactttctttatctgttaacct  
cttcagctactgtcctatgtctgtgtccacttacaacaaaattcataaataattctgt  
tcaactctttatctttctctgattactggaactggtttgtcaagagcaacaacggact  
ccacatatccaaacactcctcttcttcttgagctatcaacataattgacacagttgatg  
atttctccttataacactttattctctgtcttccaagacaccactctcagttttcc  
ttacttaacgaattgctcttttactagcttctcctcctcttcccaatttctaaaggcatc  
atcggtctagtgtctaggttaaggtcttgaatatctttccatattcactctctattt

gatctcatcagcgttataaaactatgtggaactacctgtatacactaatgattcct  
aattttcttctccagtcctaattcttctgaacagactctgcttccaactggaca  
tctccttggatatttaacacatatccctaatttgcattgttaaacagatccacccaaa  
tatttttccatagtgccctattataataaatgacaaaa

>IGR1253a

aattaactatgtggaactacctgtatacactaatgattcctaattttcttctccagtc  
taatcttcttctgaacagactctgcttccaactggacatctccttggatatttaac  
acatatccctaatttgcattgttaaacagatccacccaaatatttttccatagtgcc  
ctattataataaatgacaaaactattttatccagttgttcaagccaaaaacttggagtt  
atgcttgatgcttttacttcttcatcacaccattatccaaaccattagctaatttggg  
ttctatcttcaaaatacatctaaatccaaacatttctaccattctaccactaccttaa  
tgaagccacctatatttctacctggatcatcacaaaatcttctaatttgcctctgcc  
tatcttctgctacacaggacagcttctctcagcaaccagactgagcactttaaagata  
aatcagaccatgtccttccctgctcaaaatctcccaatagacagattctatttaata  
agactagaatccaaggacctacaggatctagctctcctatcttctaactttatttct  
accattttccctgttcttctgtcattccttgaacacaccaaccatgtcagggaactc  
tgcaactagactgaatgaaatgtttcttcccagatttg

>IGR1254a

cctgctcaaaatctcccaatagacagattcctatttaataagactagaatccaaggacc  
tacaggatctagctctcctatcttctaactttatttctaccatttcccttgttctt  
ccttgcattccttgaacacaccaaccatgctcagggactctgcaactagactgaatgaa  
atgttttctcccagatttgaacaactcatccctcttgaatgaatatttaaagacaa  
ctctgattactctgtgagaagagagagcttcaagaatgagggcaggaaaataagttagg  
agacgattctaatagttgaaagggaatatgatgggtggcttggacaggaacacagtggcc  
gatggaatgaagtagacaaattctgacatattttagaagggttaggtaagaattgcttatg  
tagggatgatgacatcatttcaaaaactggcgggggtgggtactgaggtagtaacagag  
ctgagaatgtaggcaggaagtgggtacaaggaatcaagagtctgtttgaacatgtaa  
atttgagatgccattaaatatccaaacaacagctagacatatgtctagagtaagg  
aaagaagttagggcacaatatataatgtggtagtaccagcacataaccagtacttaaa  
gccgttagactgaataagctcatccaagagagatagggaa

>IGR1255a

gtgggtacaaggaatcaagagttctgtttgaacatgttaaattgagatgccattaaa  
tatccaaacaacagctagacatatatgtctagagttaaggaaagaagtcagggtcaaat  
atataaatgtggtagtaccagcacataaccagtacttaagccgttagactgaataagc  
tcatccaagagagataggggaagagggttaatgcaaagatggccaactctgtgtcacact  
ggcttttagaaatcaagcaggttgggtgcagtgggtcacatctgtaatcccagcactttg  
ggagactgaggcaggtggatcacctgaggtgaggaggtgagaccagcctggccaacatg  
atgaaaccccgtctctgctaaaaatacaaaaattagctgggtgtggtggcacaccgtaa  
tcccagctactcaagaggctaaggcacaagaatagcttgaacctgagagacagaggttgc  
agtaagccaagatcatgccacactgcactccagcctgggcaacagtgaagactccgtct  
cataaaaaaaaaaagaatcaagcaaaggtagaccaacaagactaaagtatagccagtga  
gaaagaaggaaactatgagattataggtgcacaaaagccaagaaggaaatatattttaa

&gt;IGR1256a

>IGR1257a

&gt;IGR1258a

&gt;IGR1259a

-266-

atgtaagaaaattacataactactaaagtgttcacgactttaagtagaaaatatctcag  
acatacaaaagcagtataaagattaaaagaacacttacataccaaacaccagatgatag  
tttttaatgacataggacttcataatgttaagtggggaaaaaaccagaatacaa  
aattaagagtatgacatcagctatataaaacagtatttaaaggaggaggaaaacacatga  
aaatgtcaacaacgggtactactgggtgctaaaactgtgtggggctgactttcattctc  
tttatagtttccagtgccaagttttctataataagctattatcattttataattataa  
aaatacaaaaattgtactagcaccattaccttgggatcgtgtacaaatgtatttccttgg  
ttccaggagggaatctccagtacaaatatatttagacattcaatgatggctaaagaa  
atagaaaattacattatttcgttataagagaaccacagaagttaccataaaatatgaat  
tcattacaaaaatattttatcatggaaactataaaagataaaatctgacattataaaa  
cctgtaataaaaatatgattaagtgttaatgctgtaagtcacagaaatgctatataact  
aagaagttatcctaataatgaagaattgtacttgggaaaa

&gt;IGR1260a

cgttataagagaaccacagaagttaccataaaatatgaattcattacaaaaatattatt  
tatcatggaaactataaaagataaaaactgacattataaaacctgtaataaaaatatgat  
taagtgttaatgctgtaagttcacagaaatgctatataactaagaagtatcctaataatg  
aagaattgttacttgggaaaaaataatttttcaactgaaacctttaactaattta  
agtaataataagaatggctaacagttaagtactgtattgtactaagcactcttacatac  
atttttaattctcacattaactccaggtgtaggaactttttgttaagagacagggt  
ctcattctgctgccaggtgcagtgcatgatcatggcttactgcagcctcgac  
ctctcgacctcctgggtcaagcaatccccagcctcagcctccaaacggctcggatta  
cagtcgtagccaccatgccagcctgtagaaactttttttttttttttttttgt  
ggggggagagagtctccctctgcaccaggtgggtgtagtgcaatggcgtgatctcggc  
tactgcaacctccacctccccgggtcaagcgattctccgcctcggcctccccagtagc  
taggattacaggtatgcgccaccacgcctggctaatttt

&gt;IGR1261a

ccagcctgtagaaactttttttttttttttttgtggggggagagagtctccct  
ctgtcaccaggtgggtgtagtgcgaatggcgtgatctcggctcactgcaacctccacctc  
cccgttcaagcattctccgcctcggcctcccagtagctaggattacaggtatgcgc  
caccacgcctggctaattttgtattttattagagatgggggttcgccacgttggccag  
gclggtctgaactcctgacctcaggtgatccaccgcctcggcctccaaagtgtctggg  
attacaggcgtgagccaccgtgccagctgtagaaactattttaatctcattttataa  
atgagaaaaactaaggcacagagcagtgaggctcactcgaaacaatcagacaactaataa  
tgaagcgaaaaagctgtattgaggcagccagtcctcataaacactatacagtactactct  
ccctctgctagtatttagtacaatcctaagtagacataacaagcattcaacaataacatt  
tttacaaaaacaaaagtaacaagtttggcattcaattctcaacctctctctttctaca  
ctcttcacaaatccttcttagactctctccctgctatactgacatcgtcttgctttt  
cttaagccactattctgaccagaatgcctcttggttat

&gt;IGR1262a

tacaatcctaagtagacataacaagcattcaacaataaacattttacaaaaacaaaagtaa  
acaagtgttgccattcaattctcaacctctctctttctacactcttcacaaatccttcc  
ttagactcttccctgctatactgacatcgtcttgcttttcttaagccactattctg



accagaatgccctcttggtattcttccattcaaattataaatattcccacggctttaa  
 aaaaaaaaaaagtcagtcgtgcaccaacgttaattttgactgagtttaagaagaga  
 agttttccaagttaagccccactacatcagttacattttgaattatttttccatgt  
 attatgtctggacagttggcatacttggaaactctttagtcagtgatgtatcattttata  
 acttttaaaggaattcttgtatgggacaactactgggaagtgaatgctatgctttgaaag  
 caaggagacagcgttaaaaacatcaatacagaccaaggggcatccagtgggaactgaact  
 ctgagtgaagcggcgacagctcccggtatcgtgggattcttaagtaaacctgtccccagg  
 ccagggtccggacatccttccgggactgcttcaggcaaacctctaaggtcgctgtagcctg  
 caggccacaccctaaggcaccttaagggcctacacctgtg

>IGR1263a

acatcaatacagaccaaagggcacccagtgggaactgaactctgagtgaagcggcgacagc  
 tcccggtatcgtgggattcttaagtaaacctgtccccaggccagggtccggacatcctc  
 cgggactgcttcaggcaaacctctaaggtcgctgtagcctgcaggccacaccctaaggca  
 cttaagggcctacacctgtggagccctagggacgcttctgctcctaaggagagttctca  
 acttcccattttattctccgaaagatgtagcgacctgtaaactgaaggcggctactgaag  
 acttaccgtctttccgccccattgggtccaacaaaattgaagggggctgaagaaagt  
 gataatttgcttattcttgcctctattccaaaactccgcacgcccagaatgctcatctt  
 ttcgatccgggacatgtttgcaaacgtttctaattcaccagggacctggagtccacaaa  
 ggcttaactgaggccgaagcaaggcgtgcacgggacgtgagaccgcgaatctcagggtc  
 aggaggatccgggcggggagcggggcacaggactgccaaaagatcctgccagccaacag  
 cgggagagagggggcgggggatggagccttctcccacaccagctgctttcccgcggg  
 tggggagagcggaggcggggaccagcctggggctgcccgc

>IGR1264a

caaggcgtgcacgggacgtgagaccgcgaatctcagggtcaggaggatccgggcggggga  
 gcgaggccacaggactgcaaaaagatcctgccagccaacagcgggagagagggggcgggg  
 gatggagcctttctcccacaccagctgctttcccgcgggtggggagagcggaggcggg  
 gaccagcctggggctgcccggcggggacgcaaagccgtagccacaatgcgaccccgcaac  
 cgcgcaactcacangcttctgcctcgcccgccctgcggatcacgtgggcctctaggccc  
 cacgcgtccacgccgctctctggggcacgccgggaaatcagagtcggcggtgctgctg  
 cagctccgacttccgggtgcgggtacggcgaagcagagggttaggtgctgggtgctgttgc  
 caggggcagcggacttccggatcttctggtgggatgggcagcctggagaggcactgactt  
 ttggaaggggagaccaagacctgtgacggatggcgcttccaaagcttgatcctgggact  
 cctggaatgggggtagtggtgggtggattggagaccaggaagcggggctcagttcatgt  
 caaaactattttctttcattctcattctctcttaacgttcgttagtaatttccagt  
 gatcacataacatgtgatgacgccattgcagtggcggtta

>IGR1265a

cctgtgacggatggcgcttcccaaagcttgatcctgggactcctggaatggggtagtgg  
 tgggggtgattggagaccaggaagcggggctcagttcatgtcaaaactattttcttttc  
 attctcattctctcttaacgttcgttagtaatttccagtgtacacataacatgtgatg  
 acgccattgcagtggcggttaattggaatgtgcgcatgtgtattcttgcgcttagaaatac  
 caattttaatttctaattgagtaaatgttgataattataactcacgtacacgctcttga  
 ggtccccgtaatttttagtgtaaaggcgtctttaagaccaaagcttgggaactaaaa

ctaaaagcagctctgcaaatatgaagaatgtagaggtaatccattccgatcagtgctccca  
gcaatagatatctttaaaaaataagggaaagagaagttacctgtctcagaagtaactgaga  
atattgctttcttggaacaaacttaattggaggatatacacatttaagggcctagagaaa  
calacataaaaaattactgaaacaatagtggaggacatttaaatgaaacacaaatttgga  
ttactgtagtgggtataattgcctctgcctgccttgaaaaatgtaggaaatgtttctcc  
agtcatacaatcccaagcaaaataatttacagaacctaata

>IGR1266a

aaacttaattggaggatatacacatttaagggcctagagaaacatacataaaaaattactga  
aacaatagtggaggacatttaaatgaaacacaaatttggaattactgtagtgtataatt  
tgctctgcctgccttgaaaaatgtaggaaatgtttctccagtcatacaatcccaagca  
aataatttacagaacctaataacataaatgtatgtgccaaggatgcaagtggggaagacc  
agtgagaaatagtctctgtgtaccagggttaaaaaaacggaaagtgtcagttattaca  
aaatagttaaaataactaatggaacaaaacattaaaattatataaggaatgtcttacttg  
caaagcaaatgtaataaaacaatgggaaaagacgaaagaccctttttattttaaaaatt  
gtaaaatacacataaaattactgtcttgccaggcgcggtggctcacgcctgtaatccc  
agcactttgggaggccgagacgggtggatcacgaggtcaggaaatcaagaccatcctggc  
taacacggtgaaaccccgctctactgaaacacaaaaattagccgggcatggtggcag  
gcgccgatggtcccagctactcaggaggctgaggcaggagtatggcatgaacccgggagg  
cggagcttgagtgagccgagaccgcaccactgcactcca

>IGR1267a

acgggtggatcacgaggtcaggaaatcaagaccatcctggctaacacggtgaaacccgt  
ctctactgaaacacaaaaaattagccgggcatggtggcaggcgccgatggtcccagcta  
ctcaggaggtgagggcaggagtatggcatgaacccgggaggcgagcttgagtgagccg  
agaccgcaccactgcactccagcctgggcaacagagcgagactccgtctcaaaaagaatt  
tactatcttaaccaagtgtacatttcagtggtgttaagtatactcacgtacaaccgtcac  
cacctttcaacctctacaaatctttcactttgaaaacaaactaccattaaacaataa  
cccttctctccccacatctctccaaacctgacaaccaacattctacttactgtctctata  
atttttactaagtacctcatataagtgaatcatacagtatttatcttttggactgg  
ctcatttcacttataatgtctcaaggttcacatcatgttgagctcagtcaccaacccct  
gggtcactgaccagtatgcatacctggcctgttaggaacctggtggcacagtaggaggtg  
agcagcaggtgagtgaaacattaccacccgagctgggctcagatcagtgggggcattaga  
ttctcataggagcacaacccgtattttgaactgcccata

>IGR1268a

cctcaaggttcacatcatgttgagctcagtcaccaacccctgggtcactgaccagtatgc  
atacctggcctgttaggaacctggtggcacagtaggaggtgagcagcaggtgagtgaaca  
ttaccaccgagctgggctcagatcagtgggggcattagattctcataggagcacaac  
cgtattttgaactgcccatagagaaagttaggttggcccatgcaagggatctagcttgc  
ccattccttatgagaatctaagtgcctgatgatgtgaggtcgaacagttcatcccaaac  
catccccactcctgtcttggaaaaactgtctccgtgagactggtccctggtgcca  
aaaggttggggaccactgtagcatatatacagaattcaggtcgttttaaggtgaataag  
attcattacaatacacatcacattttgcttatccatctattgatggacatttggttact  
ttcacattttgactatttggaatgtgtggctatatatattggtgtacaaatgtcacttc

tggaccctgcttcaattctttgggtatatacccagaagtggaattattagatcataca  
gtaattcaatttttaattatttgaggaactgccatactgtttccacagtgggtgtacca  
tttgacattcccaccaatagtgcataagggtttcaatttc

>IGR1269a

gaatagtgtggctatatattggtgtacaaatgtcacttctggaccctgcttcaattc  
tttgggtatatacccagaagtggaattattagatcatacagtaattcaatttttaatta  
tttgaggaactgccatactgtttccacagtgggtgtaccatttgacattcccaccaata  
gtgcataagggtttcaatttctacatatgcttgccaacactgttattttatgtttttt  
atggtagccatcctgatgagtgtgaagtatacctcattgtaattttgatttgacattca  
ataattattagtagcatcatttcattgtgtttattggccattgtgtatctttgaataatt  
gactattcaagtggagacttttttttttttttttgagatggagtctcactctgtcac  
ccagactggagtgcattggtgcgatcttggctcactgcaacctccatctcccgcgtcaa  
gtgattctctgcctcagcctcctgagtagctgggattacaggcacgtggcaccacacct  
ggctaattttttgtatttttagtagagacgggggttcacatgttggtcaagctggctc  
gaactcctaacctgtgatccaccgcctcggcctcccaaagtgtgggattacaggtgt  
gagccactgcgcctggccaagaccatttttaagtcagat

>IGR1270a

ctctgagtagctgggattacaggcacgtggcaccacacctggctaatttttgtatttt  
tagtagagacgggggttcacatgttggtcaagctggctcgaactcctaacctgtgat  
ccaccgcctcggcctcccaaagtgtgggattacaggtgtgagccactgcgcctggcca  
agaccatttttaagtcatatttgaagcataattaacatacagtaaaattcacctt  
ttccagggtacaattccatgtgtttggcaatataacatttgtgtaaccaccaagac  
cttttttttttttttttaagacggagtctctctgttggccaggttgagtgca  
gtggcgcgatctcagctcactggaagctccgcctccgggttcacgccattctactgcct  
cagcctctgaggactgtagctgggactacaggcggccgccaccgcggccggctaatttt  
gtatttttagtagagacgggggttcacatgtttagccaggatggtctctatcccctgacc  
tcgcgatccggccgcctcgggctcccaaagtgtgggattacaggcgtgagccagcgtgc  
ccggccaccaccaagaccatttaaatgaatactgtggagacttgatatcagtaggaaga  
aaaaagcaaatctacatttactttacttaccactgtaag

>IGR1271a

ggtttcacctgttagccaggatggtctctatcccctgacctcgcgatccggccgctcg  
ggctcccaaagtgtgggattacaggcgtgagccagcgtgcccggccaccaccaagacca  
tttaaatgaatactgtggagacttgatatcagtaggaagaaaaagcaaatctacatt  
tactttacttaccactgtaagtctgtgggataaaattcagaaagatatttcgggaagc  
aataaaagaagaagcaagaaatgaattacctctacttttaaagggaattttatgacc  
aaagtagcataagaattagcaatcactgagataagatattgtctgtctctgtgttagc  
atgaagtacccaacattatctctatgcagttttgtttcttaaaacggaaaaagttg  
aactgaatctaatacatccttagatgtaacttgcagttcacaggaattacaaggatta  
agctaacagcaacacagggttgaaaaggcaaatccagaagctagaaactgttacaagac  
actggcacaggctctcaggagatcattatcattaaagcaagactattgtagattttaaa  
agacttattaaaaaacattttgttgcaaatgaagatttgagatacataccacccaat  
ggaatgcatggtcctagtttggaactgggtttgcatag

2825.1025-002

## &gt;IGR1272a

ttggaaaaggcaaatccagaagctagaaactgttacaagacactggcacaggctctcagg  
agatcattatcattaaagcaaaagactattgtagattttaaaagacttattaaaaaacatt  
ttgttgcaaattaagagatttgagatacataccacccaatggaatgcatggctcctagtt  
tgaaactggtttggcatagatgtgtgaaggaaattgggagataagtagggaaatttc  
aatgtagactggaaattagataataaaaaaattctctgaggcaggcggatcatgaggcca  
ggagattgagaccatcctggctaacacgggtgaaacccgtctctactaaaaatgcaaaaa  
attagccgggcctgggtggcatgcacctgtagtcctagctactcaggaggctgaggcagga  
aaatcgctgaacccgggaggtagaggtgagtgagccaagatcacgccactgcactcca  
gcctgggtgacagagcaggactctatctcaaaaataataaattcttgttaatttcatt  
gtatttgggtgataatatttgcctatgtaagaaatgatctttttgagatgcataatgg  
aagtattagttagatgtgtcatgtgtctgtaatttaaaatacttcagaaaaaaatag  
tgagttgaaggaaaaaatggacatgccaaggtaccagg

## &gt;IGR1273a

actctatctcaaaaataataaattcttgttaatttcattgtatttgggtgataatat  
tttgcctatgtaagaaatgatctttttgagatgcataatggaagtattagttagatgtg  
tcatgttgtctgtaatttaaaatacttcagaaaaaaatagttagttgaaggaaaaaat  
ggacatgccaaggtaaccagggtccattacaaaaaatttcaactttgtaacaatggaaa  
ctataaaactaagataaaagctctaggattgggggtgaaaagatttgaatcaaatgat  
taatccctaaaataaaaaggcaaatcagtgaaagtcctcacttcttagtaactactactt  
ccaaaaatatttagtttactgggtgctaaaataatgaaataaaaaataaaactactat  
gagatactgtttatacctaataagagaacttctttattctttttgtttgtttgtt  
tgtttttttgttttgagacagagtctcgctctgttgccaggctggagtgagtgggcgc  
aatctcggctcactgcaacctctgcctcccggttcaagcgattctcctgcctcagcctc  
ccgagtagctgggactacaggcgtgcaccaccaagcccagctaattttgtatttttagt  
agagacgggggttactatgttggccaggatgggtctcgat

## &gt;IGR1274a

acagagtctcgctctgttgccaggctggagtgagtgccgcaatctcggtcactgcaac  
ctctgcctcccggttcaagcgatttctcctgcctcagcctcccgagtagctgggactaca  
ggcgtgcaccaccaagcccagctaattttgtatttttagtagagacggggttcactat  
gttggccaggatggctcgtatcttgacctcatgaaccacctcccaaagtgtgggat  
tacaggcttgagccgtgcgccagcctgagaacctctttattcttacaatactttctaa  
cataattctccctttttctgatattaatttggtacatgagctttctttgactagtat  
ggattcgttcttagaaattgcaatttaagggaagtgaaccaattttatcataggctagt  
tgatataaacaagagacaagttcgtagaacataattttgtcataaaaatatcatcaaac  
ttataataaagatgaaaacacttctattcaatattaaacattgaaacaaatgtgagcaa  
tagatacatttaagaaagattcataaaagcaagtaaaataagtatttggccaactattcc  
agttcaagtttgaggtggctggagctttcccatcagctcagggtgcgaggtgggcacc  
aacctgaacaggatgccattccatcacagaacacacaca

## &gt;IGR1275a

cacttctattcaatattaaacattgaaacaaatgtgagcaatagatacatttaagaaaga  
ttcataaaagcaagtaaaataagtatttggccaactattccagttcaagttgcaggtgg

-271-

ctggagcttttccatcagctcaggggtgcgaggtgggcaccaaccctgaacaggatgcca  
ttccatcacagaacacacacacatgcatgcacacacacacacacgcgactgggac  
tatgtagacatgccaattcacctcacatgcacatatttgggatgtgagaggaaactggag  
taccagagaaacccacacagacattaggaaatgtgcaaacccacacagcctggccaa  
gaattaattattgtttctcgtgaatgttataacaaagtattctaggacctgctatgta  
tctttgcatccaaacttctatgttgtttgcatgtgtatcttgaataatagctgata  
gatgatttctaatgcaattttatagatttgccttttaataaatgactttcatctgttt  
caattactgtgattgctggttaaatttaggcataatgtcttattcctgtgcttttcttgt  
ttcttgtctcctttctgcttgtagaatatccaagctttcttattcctgttttact  
ctactgatttggaaaatacacattctatttctattcttt

&gt;IGR1276a

ttatagtatttgccttttaataaatgactttcatctgtttcaattactgtgattgctgg  
taaatttaggcataatgtcttattcctgtgcttttcttgtttcttgtctccttctg  
ctttgtagaatatccaagctttcttattcctgttttactctactgatttggaaaatac  
acattctatttctatttcttactgggcactcttaaattttcacattactatttgaag  
tccagagttaataatcattaggatccttctgaacaatacaaggactgaaaatgtgccaga  
agatcacccccaccttccacattatcactatttagcattttgttctcattgtctca  
aataagaaacaaaacaaatgaaatcagttatttttaaccagcattattcatttaggtt  
accgcatatttatcaaactctttagtccactgcttctgcgtcacttcttcttctgg  
gttcattcgtctcctcattagcaaacctttaaaagcctgggtgtaaatggacctcagagaa  
agaaatatatctcctggtgtaatatcaagattaaacaaagctattttgtgaaaatgt  
ttataaattgtaaacctgtgaaaataaagagtatttttctggccaggcgcattg  
gtcacacctgtaatcccagcacttgggaggccgagatg

&gt;IGR1277a

gcaaacctttaaaagcctggtgtaaatggacctcagagaaagaaatatactcctggtg  
ctaataatcaagattaacaaagctatttttgaaaatgctttataaattgtaaacctt  
gtgaaaataaagagtatttttctggccaggcgcattggctcacacctgtaatccca  
gcacttgggaggccgagatgggcagatcacgacgtcaacagatcaagaccatcctggcc  
aactgttgaacccccgtctactaaaaatacaaaaattagctgggcatgatggcgcgt  
gcctttagtcccagcttcttggaggctgaggcaggagaatcgctgaacctcaggaggcg  
gagcttgacgtgagctgagattgtgccactgcactccagcctggcgacagagtgagactc  
tgtctcaaaaaaaaaaaaaaagatttcttttctgattggatattttcagagggtta  
atctggtaaaatgtaacaaagctataaacatgattatacaagttcattagcataaggaaa  
atttttaaattttacacaggtgtttatagtagcattgtttaaaattgtggaaggctaga  
aacaaccccagtgccataaaagtgggaaatggtgatggaactatggtacatcagttca  
tctaatagcaggttatcactaaaataaagtaggaaatt

&gt;IGR1278a

agctataaacatgattatacaagttcattagcataaggaaaaattttaaaattttacaca  
ggtgtttatagtagcattgtttaaaattgtggaaggctagaacaaccccagtgccataa  
agtgggaaatggtgatggaactatggtacatcagttcatctaatagcaggttatcac  
taaaataataagtaggaaattgtatagatatgtgaaaaagaataactcataaaaaagata  
aatacaactgcataatcactgattaaaactgtaaaactgtctatgtgttgtaaggt



aataaaaagggtgccaaactgcattacactcatggaaltcaaagttctgctttttttttt  
tttgagacagggtctcactatgttggccaggctagtcttaactcttgggcccaggatgat  
cctctggcctcagcctcctgagcaaagccttttaataataatggtaaaaacaatcatta  
actttttcaatgtgcagtattattattttattttaatt

>IGR1282a

cattacactcatggaaltcaaagttctgcttttttttttttgagacagggtctcact  
atgttggccaggctagtcttaactcttgggcccaggatgatcctctggcctcagcctcct  
gagcaaagccttttaataataatggtaaaaacaatcattaactttttcaatgtgcagta  
ttattattttattttaattatttgaatggaatctcgtctgtcaccaggctagagt  
gcagtggcgctatctcagctcacggcaacctctgcctcctgggttcaagtaattctcctg  
cctcagcctcccaagtagctgggattacaggcggcagccaccaagcctagctaattttg  
tattttagtagaaacagggtttaccatattggccaggctggctcgaactgctgacttc  
aaccaatccaccacctcagcctcccaaagtgtggggttacagacctgacctatcatgc  
ctcgccgcagtattttttaatacactttttattttaagtagtttagattatagaga  
agtttcaagactgtagagagcattccagtgtgcctgcaccagtttccattgttaac  
attactatggtacaattgtcacaaactaaggaactaatattggtacattactaaactccag  
gctttttccaattcccttagttgtgcccgttgccttatt

>IGR1283a

taatacactttttattttaagtagtttagattatagagaagttcaagactgtagag  
agcattccagtgtgccctgcaccagtttccattgttaacattactatggtacaattgt  
cacaactaaggaactaatattggtacattactaaactccaggctttttccaattccctta  
gttgtgcccgttgccttattctgttcctgagtgtcatccatgataccacattgtatgta  
gtcatcacgtctcttagaggcctctctggctgtgtcagtttctcagactgtgctgtttt  
tgatgaccttaacagttttaaggagtactggtcaggcattttgtctttccatttgggtat  
gtgtagtgttgtgtcatggtaggcagagggtactgggtttggggagggaagatgacagg  
gataaagttccttttatacatcaaatcaaaggtacatgctgttaacatgatgtttca  
ctgccaccattgactgggatcacctagctgaagtagtgttgatcaggtttctccactgt  
gaagttattcctcttatttccccctttccatacagttctcttttttaaaagtcactctg  
tatacccactcttaataaagggggtgtgttccatctccttgagggtgtagtagctac  
atacattattttgaattcttgggcacaggagattaaaatc

>IGR1284a

tcacctagctgaagtagtggttgatcaggtttctccactgtgaagttattcctcttattc  
tcccccttcatacagttctcttttttaaaagtcactctgtatatccactcttaatga  
aagggggttgtgttccatctccttgagggtgtagtagctacatacatttttgaattct  
tgggcacaggagattaaaatcattaacttttatttggagtttgcattaataaagctctt  
tctttttttgagatggagtctcgtctgttggccaggctggcgtgcagtggcgtgatct  
cagctcactgcaacatccacctccagggttcagccattctcctgectcagcctcctgag  
tagctgggactacagggtgccggccacatgccagctaattttttgtatttttagtgga  
gatgggggttactgtgttagccaggatggtctcgtatctcctgacctcgtgatctgccc  
cctcagcctcccaaagtgtgagattacagggtgtgagccaccatgcctggccaataaagc  
tctttcaatacattattttacagggtccaactccgagacagtttacagtcaggttgggga  
gatcacacttatagaggaaaagttaatgacacgaaaactttataagaaatttaattttgt

acacccatgttcatagcagcattattcacaatagccaaag

>IGR1285a

tgagattacaggtgtgagccaccatgcctggccaataaagctcttcaaatacattattt  
tacaggtccaactccgagacagtttacagtcaggtggggagatcacacttatagaggaa  
aagttaatgacacgaaaactttataagaaatttaattttgtacacccatgttcatagcag  
cattattcacaatagccaaaggatggaagcaacattgggtgtccatcgacagaccatggat  
aaacaaaacatggtatagacatccaatgaaatattattcagccttaaaaagggaagaaat  
tgacacatgctacaacatggatgaatcttgagaatagacattatgctaaatgataaagc  
cagtcacaaaaagccaagctactgtatatcaggtacctaagtcacaaattcataaagac  
agaaagtagaagcgtggttgcaaggtgctgggagaacggggcgggggtgggagctgtt  
gtttaatgggtacagagtttcagttttgcaagatgaaaagagtcctggagatttgcaca  
caacattatgaatgtacttaaggctactgagctgtacacttaaaaaatggttaagatag  
taaattttatgtgtattttgccacaattaacatttctaaaagaaatacaattttgaata  
agaagtatttttataactagcctccaataagaaccac

>IGR1286a

tcagttttgcaagatgaaaagagtcctggagatttgcacacaacattatgaatgtactt  
aaggctactgagctgtacacttaaaaaatggttaagatagtaaattttatgtgtatttt  
gccacaattaacatttctaaaagaaatacaattttgaataagaagtatttttataact  
agcctccaataagaaccacagttttgctgtaaaacagaggctgcaaaatggtacatta  
tacagttgccaacatttgaaaaatccagagattatataataaagcaggatttcagcctt  
cctttttgttgttgttgttgttgtgtgtgtttttgtttgtttgtttgtttgttt  
gagacagtcactctcttgcgcaggctggagtgagtggtgcaacctcagctcactgca  
acctccgcctcctgagttcaagcaattctcctgcctcagcctcccgagtaactgggatta  
caggcacacaccaccagcctggctaattttataaaggcttcttgaaaaacagaatga  
tcgggtaatgtgagcccaggtgtgtcacctggcaaccatcagctggagctgagcagcacc  
tgccaccttagacagatcatgcatgtatagtttcatgtgacccccaccagctttgatg  
tattacacctgcccatttcactcactggtcttgaactcc

>IGR1287a

ctggctaattttataaaggcttcttgaaaaacagaatgatcgggtaatgtgagcccag  
gtgtgtcacctggcaaccatcagctggagctgagcagcacctgccaccttagacagatc  
atgcatgctatagtttcatgtgacccccaccagctttgatgtattacacctgcccattt  
cactcactggtcttgaactcctgggctcaaggatccactgcctgggcttaccaaagtgc  
tgggattacaggcgtgagccactgtgttagcccaatttttttttttctagagatgga  
gtctcactatgttgctgggctggtctcaaaactcctgggctcaagcaatccttctgcttc  
agcctccaaagtgtggtgattacaagcatgagccaccttgcccagcctcctatgataga  
atttaagcactcagaactttgtgtatttaaggtactaaaataacaagttatttgcaatt  
cccctgaaactttcacctaagccctaacttctcagtgtaacataaaggtgtcaggggga  
atcagagagaacgctctcatattctctgggaagagaaagctcctgccagaactcagcttc  
tttttgagaataaccatttaagagcacttgaccaagcctattgtattcctactcccg  
aaaatctcactcccgatagattttctgaagtgagccaaac

>IGR1288a

2825.1025-002



agccctaacttcctcagtgtaacataaagggtgtcagggggaatcagagagaacgctctca  
tattctctgggaagagaaaagctcctgccagaactcagcttctttctgagaataccattt  
taagagcacittgaccaagcctattgtgattcctactcccgaatactcactcccgatag  
atcttctgaagtgagccaaacttctgcagctcctcaaggaaacatttctcaaggaaaacatt  
tctcaagtgcgcaaatcagacacatctaaccaagagtccaaaacttcagcacaacaaaa  
ccaaacgtggtacaagaaggccgccactgaaatccaagactgtctttatctttccagtgc  
agagctgggattgagtatgtatgaaagggtgtgtctacctcccagctgcctctacttctcc  
tacacaactgcacctagctttggaaaactgttctgggcaacagtttgttttggtaccat  
ctgttcttgacgtcaagacaggcctgaagtcaggcttctaggtgcaacatagagccac  
tctgggatgctcactgaagcactctattaaaaacaatgagccacatacacctccatcata  
tgtgttcaggccagggaaggaaggtgtgtgatctaggagggggcctcattgtacctt  
tctgggattacaggtctgagcctaagggaacaaaggctgat

>IGR1289a

caggcctgaagtcaggcttctaggtgcaacatagagccactctgggatgctcactgaag  
cactctattaaaaacaatgagccacatacacctccatcatatgtgttcaggccaggga  
aaggaaagtgtgtatctaggagggggcctcatttgcctttctgggattacaggtctga  
gcctaaggaaacaaaggctgattcccctaatttcatggcccgccaagggtgtgaaaggaca  
cciccacccttatgggacataaaggagaggacacatccatgtattatgtatctgtgacag  
atatatttgggtgccttcttagaatctgtgtcccccttactactgggacccacatttc  
taagctatgcagttgaggtaggattagggtcacctctagctccaggagagccaatcagt  
atatactacaccctggtcacagttcaaggatgaacatgtgaccttgtcagaaagagact  
gaatttgaaagcttttgattaaacaatcagaaaagcacagcttgccttttctgctgctc  
atgaacagaatacatanagatccaggagtctggacatcatcttgagacctcaatgggaaa  
gggtcccaaggatggagtcaaggaagagtcactgaagccatcaaatgtaaaagagcctc  
cattcctggactgtttgggtctatgagccaataaccttccc

>IGR1290a

taaacaatcagaaaagcacagcttgccttttctgctgctcatgaacagaatacatanag  
atccaggagtctggacatcatcttgagacctcaatgggaaagggtgcccaaggatggagtc  
aaggaaagagtcactgaagccatcaaatgtaaaagagcctcattcctggactgtttgtt  
tctatgagccaataccttcccctttatcttcaacaactttagggttaggtttttagtcac  
tggcaacagaaaggatcctaataagaccccagtgaaacagaactcgacctgccaaaggct  
tggcagtttccatttcaatcactgtcttcccaccagtattttcaatttctttaagacag  
attaatctagccacagtcatagtagaacatagccgatctgaaaaaacattcccaatatt  
tatgtattttagcataaaattctgtttagtgtgtaccttatactttgtttgcacacat  
cttttaagagggaagttaattttctgattttaagaaatgcaaatgtggggcaatgatgtat  
taacccaaagattcttcgtaatagaaaatgttttaagggggggaacagggtttttat  
tattaaaagataaaaagtaatttttttaagatataaggcattggaaacatttagttt  
cagcatatgccattattaggcattctctatctgattgtta

>IGR1291a

tttctgattttaagaaatgcaaatgtggggcaatgatgtattaacccaaagattcttctgt  
aatagaaaaatgtttttaagggggggaacagggtttttattattaaaagataaaaagtaa  
atttatttttaagatataaggcattggaaacatttagtttcacgatatgccattattag

gcattctctatctgattgttagaaattattcatttctcacaagacagacaataaattgac  
tggggacgcagctctgtactatgcactttcttgcacaaggcaaacgcagaacgttcag  
agccatgaggatgcttctgcatttgagtttgctagctcttgagctgcctacgtgtatgc  
catccccacagaaattccacaaagtgcattggtgaaagagacctggcactgctttctac  
tcacgaactctgctgatagccaatgaggtatcttcttattgattcctacagtctgtaa  
agtgcataggtaatactttgtatggttcttactatataagagatctgttataaata  
ataagattctgagcacattagtagatgggtgataactacaccagcaaacattctgtt  
aaaagttatgaatgctggtgtgctgtaaaaatgattgtatttcttctcctccagactc  
tgaggattctgttctgtacataaaaaatgtaagttaaat

>IGR1292a

gtgatggttcttactatataatagagatctgttataaataataagattctgagcacatt  
aglacatgggtgataactacatcaccagcaaacattctgttaaaagtatgaatgctggt  
gtgctgtaaaaatgattgtatttcttctcctccagactctgaggattctgttctgt  
acataaaaaatgtaagttaaattatgattcagtaaaatgatggcatgaataagtaaat  
ctgttttaagctgtaaatcattagttatcattggaactatttaatttctatatttgtt  
ttcatatgggtggctgtgaatgtctgtactataaatatgaggaatgactttttcaag  
tagaatcctttaacaagtggattaggctcttgggtgatgtttagttgcctcccaaa  
gagcatcgtgctcagggtcttccagaaggattccacactgagtgagagggtgcgtgcta  
gtctccgtgcagttctgacttttctcacttaacgttttctgaaagtattagcaactc  
agaattatattttagaaccatgatcagtagacattaaaatataaacaatgccctata  
ttaataatttctgcatacttaataattatgactatatgatggtgttgcatttgaa  
tatgtcctggcatattaaaaatgtaaaatatatagtttta

>IGR1293a

tcttctcacttaacgtgtttctgaaagtattagcaactcagaattatattttagaac  
catgatcagtagacattaaaatataaacaatgccctatattaataattctgcatact  
taaataattatgactatatgatggtgttgcatttgatgctctggtcatattaa  
aatgtaaaatataatgtttattagtctaaatagaataaaactaccagctagaactgtag  
aaacacattgatgatggttaattgtataatgcattacacttccaaacatttttccag  
ttacataaattagttatcttataaaaactcctcagtaataatataagcttcatctac  
ttttgaaaattttatcttaatatgtggtggttgcctagaaaacaaacaaaaaact  
ctttggagaagggaactcatgtaataaccacaaaacaaagcctaactttgtggacaaaa  
ttgttttaataattttttaattgatgaattaaaaagtatatatttattgtgtaca  
atatgatgtttgaagtatgtatacattgcagaatggacaatggaccaaattttataacc  
ttgtcttgattattgcattttaaaaatttctcatttagcaccactgtgcactgaag  
aaatcttccagggaataggcacactggagagtcacactgt

>IGR1294a

ttaattgatgaattaaagtatatatttattgtgtacaatatgatgtttgaagtat  
gtatacattgcagaatggacaatggaccaaattttataccttgccttgattatttgcatt  
tttaaaatttctcatttagcaccactgtgcactgaagaaatttccagggaatagg  
cacactggagagtcacactgtgcaagggggtactgtggaagactatnaaaaactgtc  
cttaataaagaatacattgacggccaaaagtaagttacacacattcaatggaagctat  
attgtctggctgtgcctatttctatggaattgacagtttctgtataacctattgtcat

ttttttttcacagaaaaagtgtggagaagaaagacggagagtaaaccaattcctaga  
ctacctgcaagagtttcttggtgtaatgaacaccgagtgataatagaaagttgagacta  
aactggttgtgcagccaaagatttggaggagaaggacatttactgcagtgagaatg  
agggccaaagagtcaggccttaatttcantataaatttaacttcagagggaagtaa  
atatttcaggcatactgacactttgccagaaagcataaaattcttaaaatatttcaga  
tatcagaatcattgaagtatttctccaggcaaaattga

## &gt;IGR1295a

aagatttggaggagaaggacatttactgcagtgagaatgaggccaagaaagagtcag  
gccttaatttcantataaatttaacttcagagggaagtaaatttcaggcatactgac  
actttgccagaaagcataaaattcttaaaatatttcagatatcagaatcattgaagta  
tttctccaggcaaaattgataactttttctatttaacttaacattctgtaaaatg  
tctgttaacttaatagatttatgaaatggtaagaatttgtaaatgattttattta  
atgttatgtgttctaataaaaacaaaatagacaactgttcaatttctgctggcctc  
tgtcttagcaattgaagttagcacagtcattgagtagatgccagtttggaggaagggt  
ctgagcacatgtggctgagcatccccatttctctggagaagtctcaaggtgcaaggcac  
accagaggtggaagtgtctagcaggacttagtggggatgtggggagcaggacacagggc  
aggaggtgaacctggttttctctacagtatatccagaacctgggatggtgcagggtaa  
atggtagggaataaatgaatgaatgtgctttcaagactgattgtagaactaaaatgag  
tgtaaggcgtccccctggaagaaggcgagtggtggaacctg

## &gt;IGR1296a

tagcaggacttagtggggatgtggggagcaggacacaggcaggaggtgaacctggttt  
ctctctacagtatatccagaacctgggatggtgcagggtaaatgtagggaataaaatgaa  
tgaatgtgctttcaagactgattgtagaactaaaatgagttgaaggcgtccccctggaa  
gaaggcgagtggtggaacctgtaactaggttctctcccagcctgtgagaagaatttgga  
gatcaatctcattgccagtataagaggaagccagaaacctctctccaaggcctgcag  
gggttcttaccacacctgacctgcaccataacaaaaggaacagagagacactggtagg  
cagtcaccattagaagactgagttccgtattcccgggggcagggcagcaccaggccgcac  
aacactccattctgcctgcttatggctatcagtagcatcactagagattcttctgttga  
gaaaacttctcaaggatccagaaaatgctctttaaataattttaaactgatatagac  
ccaaaggagagacccagtaacaatattcagctatattatccattctctcttcttctt  
caacaaatctgtattgatcacaggctctctgctgggtgtgggatgcagctgtggcctgt  
gctggaggtccttagaggccagtactctatctctggcctt

## &gt;IGR1297a

agaaaatgctctttaaataattttaaactgatatagacccaaaggagagaccagta  
acaatattcagctataattatccattctcttcttcttcaacaatctgtattgatc  
acaggctctctgctgggtgtgggatgcagctgtgggcctgtgctggaggtccttagaggc  
cagtactctatctgggcttattctgcatggattgctgcagtgttgggctccactgctg  
tgtgaagcaattgctcctgctcttctgggcatgggagaagggtcagagcagtcggacac  
agattcccaggcaggagaatggaactcctccagggaagaagacgtgtttcttccagc  
acacacccaggcatggtggctcaggaccgtggaccaggtcccaacttgcattgcaccaa  
gccccaggatcaggagcagagctagtgaggagcaagatggatgaggacagcacggtgct  
gaccactctagacagacaggagacaggaaacaggaaactcaactgcaaaaagactgaat

ctcaacttgattcaattaggcagatactgagttccagtatactccaggactattctaggg  
gctaggattcaacagtgaaataaacagacaaaatccttccctgtacacttatatcctc  
tcaaaaagctccttccctcttcttatcagggtctaa

>IGR1298a

gagacaggaaacaggaaactcaactgcaaaaagactgaatctcaacttgattcaattag  
gcagatactgagttccagtatactccaggactattctaggggctaggattcaacagtga  
taaacagacaaaatccttccctgtacacttatatcctctcaaaaagctccttccc  
ctcttcttatcagggtctaataagtaataaggacttaagactggaatacacatcta  
aatccccaataatgagccctaccaatctgccagggtccagagaagctaaaaacaatcag  
ggctgttgcaactaactgaaataaaacttgattcgaactcatgtcaagcctgttgaca  
cacacacacatgtccacgtgtcactgctgtgcatagaaacctctgactactaccatctg  
aagtcaggctccttcacagggtcattcaaggctgacctctgccccctctgaccttgaca  
tacagaaatacaggcatcatcatgtaacaacctggcaagaaaacattaaccagggtgcc  
tcattcccattattttaagtgcgaaaaattttaatgcattatgtctcaacccaaaatctt  
caaccaacttcttaaacataaaacatagtaaatgcctgtatataaggaaaaaacacat  
taggggtgtaaaaatttaacaaaatattttgtatttatt

>IGR1299a

tccatgtaacaacctggcaagaaaacattaaccagggtgcctcattcccattattttaag  
tgcgaaaaattttaatgcattatgtctcaacccaaaatcttcaaccaactctttaaaca  
taaacatagtaaaatgcctgtatataaggaaaaaacacattagggtgtaaaaatttaa  
caaatattttgtatttattttaattgtagtaaaataaggatataagatatttaaaa  
cagtactcctgatcactcagcagttaataataatgggtgcttctgtctgtataacatgctg  
cacgtccccctagttaacattcagagccttccgattgtctctgtgaacgtgatttgc  
tactaatcatatgtggaataaacctaaagactttgtccattgactccccctcatcacttgg  
ttaaagaatttcttatgttttaggggacataaatattttacaataataatattggtggga  
aagcattgtattgagagacacgttctatgaagaagaactgtatgtggaacatttattg  
tggagatgttcaggccaggcatggtggttattgcctgtaatcccagcactttgggaagct  
gaagcaggaggatcacttgatgcaggagtcaagactagcctgggcaacatagcaagat  
gtctctacaaaagaaagaaaagtagccaggcgtggtggt

>IGR1300a

acgttctatgaagaagaactgtatgtgaaaacatttattgtggagatgttcaggccagg  
catggtggcttatgcctgtaatcccagcactttgggaagctgaagcaggaggatcacttg  
agtccaggagttaagactagcctgggcaacatagcaagatgtctctacaaaagaaaga  
aaagtagccaggcgtggtggtgcacatctgtagttccaactactcagggtggctgaggtgg  
gaggatcacctgagcccaggaggtgaggctgcaatgagctctgattgtgccactttgggc  
aacagtatgaggctgtttaaaaaaaaaaaaaaaaaacaaaaaacaaagagatgatctgta  
aagaatgctagctcttattcttcacagaatatccatgaatttcatacctctgtgccttg  
gtccacactataccctctgtctcagtatcttttcttcccaccaacaaactgtaat  
tgccctttagatgtttcattcaccatatacctcctcttttttttttagagacaggg  
tcttgcctgtcaccaggtggaatgcagtggcgtgatcattgctcactgcagccctga  
actcctgggctcaagtattccctgttccagcctcccagtagctggggctacaggcac  
ttactaccatgcctagttaatatcttttaaaattatttg

## &gt;IGR1301a

ttaccataatcctcctcttttttttttagagacagggctctgctctgcaccagg  
ctggaatgcagtggcgtgatcattgctcactgcagccctgaactcctgggctcaagtgat  
tcccctgtttcagcctccccagtagctggggctacaggcacttactaccatgcctagtta  
atatcttttaaaattttttagggatgggggttactatgtgacctgggttggtctta  
aacttctggcctcaagtgatcctcactctggcctctcaaagtgcctgggattacaagta  
tgagccaccacactgccctctttttattttattttattttatttatttattat  
tttttcgagatggagtctcactttgtcaccacagcctggagtgcagtggcatgatctcg  
ctcactataacctccacctcctgggtccagtgaattcctgcctcagcctcccagtaa  
ctgggactacaggtgcatgccaccacaccagctaattttatatttttagtagagacag  
tgttttaccatgttggtcaggctggcttgagctctcacctcaagcaatccacctgcct  
cagccttccaaagtgcctgagattataggtgtgagccaccgtgcccggctttttattat  
ttattcattcattttattttatttttttagagacagagt

## &gt;IGR1302a

ccaccacaccagctaattttatatttttagtagagacagtgtttaccatgttggtca  
ggctggctctgagctcttcacctcaagcaatccacctgcctcagccttccaaagtgcga  
gattataggtgtgagccaccgtgcccggctttttattttatttattcatttattta  
ttattttttgagacagagtgtcactctgtcaccatgctggagtgcagtggcatggtct  
cagctcactgcaagctccgcctcccaggttcatgccattctcctgcttcagcctccctag  
cagctgggactacaggtgccaccaccacacctggctaattttttgtatttttagtaga  
gatgggggtttaccatgttagccaggatggctctcagctcctgacctcatgatctgcca  
tctcagcctcccaaagtgcctgggattacagcagatgagccaccgtgcttgactgtttta  
ttttttaagagatagagtcttgctatgttgccaggctggacgcaaactcttgggttca  
agtgatcctcccatctaccctcctgagtaattggaactataggcaagtccaccatgtc  
cagcagtttttaactcfaatgtacctgcctgtggccagctgacctactgctttcatgg  
tctcatatcattgtgtacatttaccatcaggatcacgaca

## &gt;IGR1303a

cttgctatgttgccaggctggacgcaaactcttgggttcaagtgatcctcccatctcac  
cctcctgagtaattggaactataggcaagtgccaccatgtccagcagtttttaatctc  
aalgtacctgcctgtggccagctgacctactgcttcatggtctcatacattgtgtaca  
tttaccatcaggatcacgacatagagagagtaaaatgcacaggcctataaatgtaacgag  
ctgttacaaaagtttcaaagccacaggaaggttctaccaggtgcttagaatgtttattcc  
atttatacaaaaaagaactagaaaaacagttccagagtataaaagactcaagcctaggag  
tctccatgtttcactgtccgatggaagtccattcttaccaaagaatcatggcagattt  
aggttttcctggtgtcagtattagctcagacctcatatttaacaatgtttgaaaagttg  
ggatctcctatactagtgtgtacttatcctgatgaatggctccagatcgctttggtaaa  
ggattaaagaaagtttactgcatgtatatgtagtgggattatagagtcctcctgttcaat  
caatggacactgggtttatgaatgccttagatgtgggaactggaggaagagcttgcat  
ccactgtggtggctgatgtcagcccttaccacttgatta

## &gt;IGR1304a

tgtacttatcctgatgaatggctccagatcgctttggtaaaggattaaagaaagtttact  
gcatgtatatgtagtgggattatagagtcctcctgttcaatcaatggacactgggtttat

gaatgccttagatgtgggaactggaggaagagcttgcatttccactgtggtggctgatgt  
cagccctttaccacttgattacatatacatgctaattgattatcaacgtttcttctct  
aggaacactttaatttcttagccaccacaatagatccctgaaggtaagagtcaggcac  
cctggttggcaccatggccttgctgtttgtggtggaattatgtccccctgcctctaat  
gtttaagtgttccaacctgagctctgccattctagggatctcatgttgctattgatat  
tagggagtcattgtcattggcagcatctttcacctcaacccagcttacaggggacatcc  
accaccaatgtttgcaatgatgcctgcttcttccactagtgtatctgttgctgtgtag  
taaaaggagtataattctgtgtcctccaggaacatactcagatagtaggttctcaggccag  
ataaaaaaatccatttttagtattctgcttctgagctatctgctcttttcttcaata  
ctatgggaggaaggtcaggtgtctccacttcataattctgt

>IGR1305a

atgcctgcttcttccactagtgtatctgttgctgtgtagtaaaaggagtataattctgt  
gtctccaggaacatactcagatagtaggttctcaggccagatacaaaaaatccatttta  
gtattcctgcttctctgagctatctgctcttttcttcaatactatgggaggaaggtcagg  
tgtctccacttcataattctgtacaccatcatcaggatcaggctcaaggagccactccag  
caactattaggactaactccagttgttcttgcgaaaactaattctgagtcgtaagtat  
accacaccaataaataccaatcccattcaactctataattctctggacaaacagctgcag  
gatgcactcgattctggattctgacagtacatattagtaaactcctgcacaccttacct  
tccctgccaaagactgtatgtcagctgtgaagctattgtctctcagcttcaagcccactat  
actatactctgctgcagctgggattctgcaaaccaatttctcctttgccagctgcaaccc  
tgtaggactgtcaatggagggtgtgactaggaggctggagggaagaaaaggggacttt  
tttcttctgttgcttctattctttgttttgttctctgttctgtctcttataattcc  
tattcctaatacctaatacctaacaatgaacctggcagcagt

>IGR1306a

gggattctgcaaaccaatttctcctttgccagctgcaaccctgttaggatctgtcaatgg  
aggggtgtagactaggaggtggagggaagaaaaggggactttttcttctgttgcttct  
attctttgttttgttctgttctgtctcttataattcctattcctaatacctaactct  
aacatgaacctggcagcagtagttgactctagtagcaacatttgattatagtttgagct  
ttttccaccattcatagaaccgaccttagcacacctatttccctctgagaccccagcaa  
cagccaatcagcatccccctcagaggtctggatcccattcccaaaggaccccttttctgag  
ctcaggaactgcactgcatgcagagcagtgctccctctacagatgtctgagttcaggtc  
caciaagcccgtctccaaattataagttttaataatttcacctgttccctttgcttc  
ccagacatagaagtgtagctgcttcccacaattgccacctccttgataccttattgttc  
ccttttgctgcctagtttccaataacctggctaacagttctttatatttaattctgct  
tattaaaataactggtagtttgtgtctcctgggtggcctagttaacacaagatgtt  
cttagatctgactttaattattggccttgaggcaataagg

>IGR1307a

ctgcttcccacaattgccacctccttgataccttattgttccctttttgcctgcctagtt  
ttccaataacctggctaacagttctttatatttaattctgcttattaaaataactggata  
gtttgtgtctcctgggtggcctagttaacacaagatgttcttagatctgactttaatt  
attggccttgaggcaataaggggtgttgaggagggtgtgggcagaaacaaatgtcatct  
tgtgaagtatatgtttcaagtgaatatgttattctgtttccaggcaaggagaagttagtc

tactctggcaagggggaaaggtctgcttctaccagttaaggagggtcagagaatttgga  
ggttcaagagtttttaggttgtccacccaaatgtttctatccaggtctcatggtccag  
ccttctcataagagccctgactttgacacagaatgtgcaaatccactcttctcttt  
gaagctcttcaaaggctgcaataatcagatcctgagcctaattttcagatcggttggc  
ctgcagttgctggaaataagagtctcctctaaagttgccatgggagttgtcagcattcc  
gagaatatgttaagttagaattagattgccatgagcctatcattttcttttgtaaggtc  
ttcagtgctgtcagaagagtcattgtactctgcaatcttt

>IGR1308a

aaataatcagatcctgagcctaattttcagatcggttgcctgcagttgctggaaataa  
gagtcctctaaagttgccatgggagttgtcagcattccgagaatatgttaagttaga  
attagattgccatgagcctatcattttcttttgtaaggcttctcagtgctgtcagaagag  
tcattgtactctgcaatctttataattaccattgttctcataataacctgtcattttatc  
tttcattgtctgtgtccacctgccccctcatctaaattaaccagagctaaaagcttaag  
aaattgcaaagccactgcctgccagaagttattatcaacctacttatattcagcaatagg  
ttcatattattttaaaatagtgaaataaccaatgtcaatgttccatttccaagtgttgt  
tacctaaaactacatctgatactaatgtcatagccaggtctcttcagaaagcagagcct  
gaagtcagggtctgcttgccttctatgcctggaaattaagggtgctgtgttggtgttgg  
gctgacaaagagacagataggaggcagtgagggaatctgagaaggcacacaaatatgta  
tccaatacaaacataaatttccacaactgatgcaagaagacatagaaaaatctaaacaga  
tctagaaccactaaagaaattaaccagtcattttaaatac

>IGR1309a

cttctatgcctggaaattaagggtgctgtgtgtgtgtgtgtgtgacaaagagacagata  
ggaggcagtgagggaatctgagaaggcacacaaatatgtatccaatacaaacataaatt  
tccacaactgatgcaagaagacatagaaaaatctaaacagatctagaaccactaaagaaa  
ttaaaccagtcattttaaactcttcttgaaagaatacaccaagtccagatagtttctag  
gtgagtccttctaaagtgtcaggtcacatataattccaacatatataaactcttataga  
aaataaacaanaatgagataatttccagctcattttgtgaagctaatatgtgcatacga  
agtcagaggaggaaaatatatgaaagaaaaattatgatccatactcactcatgaatgtg  
gacataaacattgttatcaaagtttataaatccaaatccagcatgtataaaaagacatt  
acataacaactaatgtaatgtcttcttcttcaggaatataaaattaagtgtcaggaatatg  
aaatatcctttatttcaggaatataaaattaatgtcagaaaatctattaatgtaatt  
accacattaatcatttttaaagagaagaatcaggctgggcacagtggtcacgtctgta  
atccagcactttgggaggccgaggcaggtggatcacctg

>IGR1310a

gtctttcttccaggaatataaaattaagtgtcaggaatatgaaatatcctttatttcag  
gaatataaaattaatgtcagaaaatctattaatgtaattaccacattaatcactttt  
aaagagaagaatcaggctgggcacagtggtcacgtctgtaatccagcactttgggagg  
ccgaggcaggtggatcacctgaggtcaggagtttgagaccagcctggacaacatggtgaa  
acctgtctctactaaaattccataattagctgggcatggtggcgggcacctgtaatccc  
agctactctggaggctgaggcagaagaatcgctgaacctgggaggcggaggtgcagtg  
agltgagatcgtgccattgcactccagcctgggtgacaagagcgaaactcagtcataaa  
tataaaacaaaaagagagagagagagagaagaatcacatgatgatcaatgcagaa

aaagcattactgaaatttaccattctatttataattacttttaacaaagtcaaaata  
gaaagggaacttttttaacctgataaaccttacagaaaatactgtgctcaatggtaatatgt  
tcaaatcatctcttttaaaaaagaataatgcaagaataacctgcaggaccactctgtgcac  
tgcacaatcccaggaagcaccatttacatcagagacatta

>IGR1311a

acattcatttattataattactttttaacaaagtcaaaatgaaaggaactttttaacc  
tgataaacttacagaaaactgtgctcaatggtaatatgttcaatcatctcttataaa  
aaagaataatgcaagaataacctgcaggaccactctgtgactgcacaatcccaggaagca  
ccatttacatcagagacattatataatttgagtatgtatgacaatttcataccagatagaa  
gtatctttttccaatttgcacagaggctttatatgatgtactagtgtccctggagactaa  
ctttgttccattaaaaactgaccaaaggctccagccttgcaaaaagatcattcatatt  
aatagaactaataaataatgaggattataaagggaagaaacaaaaatcatatatattttgc  
agatgatacactatgataaaaatggaactcaaaaacacgtagagtcagtc aaatgattat  
aaggaataagagagttcagcaagttgtctggataaatatgcaaatcaattacaaattata  
cattaccaaaaaacagataatgtaattttaagaagacatcattacaaataagtataagc  
attattataatacttataagactataaagtgccaaagggtatgggggcacgtgcttgtaa  
tcctcaactacttgggaaaggctaaggcaggaggatcattt

&gt;IGR1312a

caagttgctggataaatatgcaaaatcaattacaaattatacattaccaaaaaacagata  
atgtaattttaaagaagacatcattacaataagtataagcattattataatacttataa  
gactataaaagtgccaaaggggtatgggggcacgtgcttgaatctcaactacttgggaaag  
gctaaggcaggaggatcatttgaggccagaagtttgaggctgcactccagcctaggcaac  
tgagtaagaccccatctctctctctctaaagaaaaaaaaaagaaatgtaagtgccaaa  
gaataaatctaacaaaacatggaaaacatttaaaaactttatgaaagatagtaacaacag  
caaatgcagagacctagtatgtccacggatcaagacttgacactgtaatttgcaaactga  
tttatacatttaatgtgactcctatcaaaatccaagcatttttcatgatcatactat  
gctgattctaaatgtacacgggaaaatgagagtccaagaatagccaatacaattctaaa  
gaaggagctgaaaatgggagaacgtggccgggtgtggtggctcacacctgtaatcctagc  
actttgggaggccaaggtaggcagattgtctgagctcaggagttcgagaccacaatgcgc  
aatattgcaaaaccccatctctagtataaaatccaaaaaaa

&gt;IGR1313a

cgggaaaatgagagtccaagaatagccaatacaattctaagaaggagctgaaaatggga  
gaacgtggccgggtgtggtggctcacacctgtaatcctagcatttgggaggccaaggtg  
ggcagattgtctgagctcaggagttcgagaccacaatgcgcaataattgcaaaacccatc  
tctagtaaaaatcaaaaaaattagctgggcgtggtggcatacacctttagtccagcta  
cttgggagggtgaggcatgagaatcgcttgagccggggaggcgaggttgcaagtgcagctg  
aggttgcaccactgcactccagcctgggcaatagagtgcagacctgtctcaaaagcaaac  
aaacaacaaaacaaaacaaaacaaaacccaaatgggagaacttgcttgctaga  
tatcaagcctaataaattaagtgtggtttgacaaggggtataacagtagttccaaca  
gagggtgattcccaacccaagggaacattggcaatttgggggtgtcagaattggagg  
ggaaggagggggatgctactggcatctactgggtagaggtcacggatgctgctaaacatcc  
tacagtacacacaacagccctccacagcagaatttccccatcaaaatgtcagtagtggc



agggttgagaaatcctaggggtagacagatagaccggtga

&gt;IGR1314a

caagggaacatttggcaatttgggggtgtcagaattggagggggaaggagggggatgctact  
ggcatctactgggtagaggtcacggatgctgctaaacatctacagtacacacaacagcc  
ctccacagcagaattctcccatccaaaatgtcagtagtggcaggggtgagaaatcctagg  
ggtagacagatagaccggtgaaaaactaatftaaaacagaaaatatgacctgggagtggt  
gcttatccagcaggaaacagtagggacactcatattgagtaacttaaggcagttatttta  
ataaagggaccattataaaagaacagagtgtagggaaaacaaagcccttggcgactggta  
acagggaactgcaacaggagaggggactatttactgaaactcagagatacagagcacacaga  
gatacagagcactacagcgatacagagcactacatgcagacggccaattggcaagagctg  
ggaccttaagtcaaggggacacaaccagcttgacagcaaccttgcaaggagagagctaaggg  
catacataccttgcttcacgcacctctaccttttgatcacctgtcaatgtccccatggt  
caaaccatgggaacctgtgggcaaataagctattaatgtagttcatactggtcagcct  
cccaggacacagaggctaaaaggggggtggagagcagatct

>IGR1315a

acaaccagcttgacgcaaccttgcaaggagagagctaagggcatacataaccttgcttcac  
gcacctctaccttttgatcacctgtcaatgtccccatgggtcaaaccaatgggaacctg  
tggggcaaataagctattaatgtatgttcatactggtcagcctcccaggacacagaggctaa  
aaggggggtggagagcagatctggagaggcaaataggagctttccagatggaatggaagga  
tttcataaataaaaaccccaaagagcagagcaccaaggaaaagactgatacattcaatat  
tcatacaatttaccataaggagagtgaagaagacaaaccgcaagctaggacaaatattgt  
ttcatatataaatgactaaggattagttcaagaatgtctaacaaaatcctcttaatcag  
taagaaaaagataaattaccactagaaaaaaaaaaggtaaatgacatgaataagtattt  
cttagaacaggaaacacaaatggccaataaacatataaagagatgttcaaccttattagt  
agtcaggaaaatccaaaattaaaccacagtgagataacatttcacaccaccagactggc  
agaaattaaagtcagacattacaattcttggccaggatgtaaagtaaaaggaattctt  
acacattgtccacaaaagagtaaaatgggtacttttgaat

>IGR1316a

atggccaataaacatataaagagatgttcaaccttattagtagtcaggaaaatccaaaat  
taaaccacagtgagataacatttcacaccaccagactggcagaaattaaaaagtcagac  
attacaattcttgccaggatgtaaagtaaaaggaaattcttacacattgtccacaaaaa  
gtaaaatggtacttttgaatgtagttcttagtaaaaaattgaacgtgcacgtaccttat  
gaccccgaaattcaacctagtgcataattcagggaattcttgccatgaacgtcaggag  
agataaacaaccacaatcatagtagactgtttcttaataaaacttatttaggaaaact  
ttcaggtttacagaaaaatggggaagatagtacagaaagtccacgtactccatatcca  
atttccttattcttaacatcttcttttttttttttttttttttagacggagtgtc  
cctctgtcactcaggetagagtgcggtggcacaatctcagctcactgcaatctctgcctc  
ccaggttcaagcaattctcttgccccaacctagctgggattacaggcatccgccaccgtg  
ccctgttaatttttgattttcatttttagtagagatgggggttcaccatcttggccag  
gclggtctcgaactcctgatctcatgatccaccacctgg

>IGR1317a

agtgcggtggcacaatctcagctcactgcaatctctgcctcccaggttcaagcaattctc  
 ttgcctcaacctagctgggattacaggcatccgccaccgtgccctgttaattttgtatt  
 ttcatTTTTtagtagagatggggtttcaccatcttggccaggctggtctcgaactcctga  
 tctcatgatccaccacctcggcctcccaagtctgggattacaggtgtgagccacagca  
 cccagtccttaacatcttacattagtagtatacatgtcacattaatgaatcaatatgg  
 atgcattattgttaactaaagtcataatcttattcagatttcttagttttacttacttt  
 ttgcagcatgttcttaactaaaacttttaaaacccccaaaatgggccaaagagcagtg  
 gctcacgcctgtaattccagaactttgggaggccgaggtgggcagatcacctgaggtcag  
 gagttcagagaccagcctggccaacatggtgaaagcccgtctctactaaaaatacaaaaaa  
 aaaaaaaaaattagctaggcatggtggcacatgcctgtaatccagttactcgggaggct  
 gaggcaggagaatcacttgaacacaggaagcagaggttcagtgagccgagcgggcacca  
 ttgactccagcctgggcaacaagaacaaaactccatatac

# >IGR1318a

ccaacatggtgaaagcccgtctctactaaaaatacaaaaaaaaaaaaaaattagctagg  
 catggtggcacatgcctgtaatccagttactcgggaggctgaggcaggagaatcacttg  
 aacacaggaagcagaggttcagtgagccgagcgggcaccattgcactccagcctgggca  
 acaagaacaaaactccatatacaaaaaaaaaaaaaaatctgcaaaatgtccatcagta  
 ataaaatagataaataaattatggcttactcattagaagattatagtaaagtaataca  
 gtaataataaactacagttatatgtatcaacatggatgagtcgaaaacattttgttg  
 accagtaaaagcaaatattaaataaatacatccaacatgattccattataaagagggca  
 aaaatagggaaaatgaaatcatatataattagaggatatttatataataaaacaag  
 aataacaataaataatgattaacacaaaaataaggataatggttcccttgggtggggagg  
 acatggaagctgttgaggacaccttcatggggagagggaatgttcccttcagttgggt  
 ggtggacacatgggtttttgtatgttttaactatacatagagattgaattttttgt  
 atgtatgatgttcataataataattttaaggtctgat

# >IGR1319a

acaaaaaaataaggataatggttcccttgggtggggaggacatggaagctgttgagg  
 gacaccttcatggggagagggaatgttcccttcagttgggtggtggacacatgggtttt  
 gttatgttttaactatacatagagattgaattttttgtatgtatgatgttcataat  
 aataattttaaggctctgatccctgctcttttcttcccttgaaagcaggttcttaa  
 atagtcctcatctccaacattctggcttaagggaaggtgacactttagagtcagagc  
 aaacaggaacccagccctctgtgccccaccaaagaaatgtgattatgtctcttatcat  
 cttcttcaagccccaccacatcatgatgcttctgtttctcagaagctgaaaaggtg  
 ctgacataatgtaatgagtagaatcaggcagtagacggatctaccagagccatgtg  
 tgtcaccgaggggcaggttgactctcagctgtggttgggaacataggccaaatctctg  
 cctttaggtgggaaatgaccccaatttgaagattcatggagcagggtgactcttgctgt  
 taagaatgagagactcaccgtcatcagcccaagagatgccttctgcaacagcgaaaagc  
 cacctcttggcagatccctttacgtgggtacagctggact

# >IGR1320a

tggactctcagctgtggttgggaacataggccaaatctctgcctttaggtgggaaatgac  
 cccaaattgaagattcatggagcagggtgactcttgcctgtaagaatgagagactcacc  
 gtcacagcccaagagatgccttctgcaacagcgaaaagccacctcttggcagatccct

ttacgtgggtacagctggactgggcactgggatccagctggggcctgggaaactgccaca  
ctggcacccttattctccacagtcacccctcacttgctgttcatttggttgttatt  
cattcactcagcaatactcacacagctgcaatgtgccaggcactgttctaagtattggt  
ggcacagcagggagcaggacatagccctgctctagcagcatcacacatttagggagggt  
cagacaacaacaataaaaacaactataaattgtgtaagtgccttcagtcaagtagta  
gaagcaaaacaacccagtgtaagatgctaaagtcaggctacctggnnttaagttctgct  
tctactgctacctgccattgggcaagtaattaatcttctaggagtcanttttcttctc  
tatagattggaagtgatcatcaaacctactgaataggattgattgaagattattcttctc  
caaaaatatttattgagcaccactatgtgccaggcaccat

>IGR1321a

ttaagatgctaaagtcaggctacctggnnttaagttctgcttctactgctacctgccatt  
gggcaagttaattaatcttctaggagtcanttttcttctatagattggaagtgatca  
tcaaacctactgaataggattgattgaagattattcttccaaaaatatttattgagca  
ccactatgtgccaggcaccatgccaggcactaaggattaatagtgaaagtgacagacaag  
gttctgccctccaggaacatacatgatagcagaggaagagtcactggacaagcaaaggcc  
atgtcggatgtgataagggttagggactaacgtgatccaggagattcaggaagtgccag  
ggagagagggccactttatatgtctgacaaggtgacatttgagagctaaatgatgaaaag  
gagccatctatgtgaaagcctgggggctggcgatagttaaacagagggacagcaagtgtg  
aaagtatagtagcaggaatgaagttggtgtggttgaagaacagcaggaagacagatggct  
ggagcacattagcagggaggtaggagatgaggctagggaggggaagagaggggctcatgcag  
actcatgcaggccagaaaaggactttgcatttcattctagtaatgggaagtcctgagg  
gtttaagcagaggagggtcagatgacttactttttttt

>IGR1322a

gaagttggtgtggttgaagaacagcaggaagacagatggctggagcacattagcagggag  
gtaggagatgaggctagggaggggaagagagggtcatgcagactcatgcaggccagagaa  
aggactttgcatttcattctagtaatgggaagtcctgagggttaaaagcagaggagggt  
cagatgacttactttttttttagacaggggtctcactctgtcatccaggctggattgca  
gtggcaccatcacagctcactgcagcgtcaacctcctgggctcnggtgacccatct  
cagtcctcctgggtagctggcactataggcatgtccaccacgccaggctaattttgtat  
ttttgtagagatgggatttctccatgttcttaggctgggtcctcctcctgggctcaa  
gcaatctgcctatgttggcctcccaaagtgtgggattacaggtgtgtgccactgcaccc  
ggcaacttacatttttaaaagatctctagcttttgtgtgggcacagattaggttgaatg  
ttcgaccagagaaacaagttaggatgctattgtcctatggtgagtgacatggttatacag  
ggtgaatggtgcagggtgggctggaggagaagacagaatcctacagtcaggggcattgta  
gtgggcactctgatctctctctctccacctctatgcagc

>IGR1323a

agatctctagcttttgtgtgggcacagattaggttgaatgttcgaccagagaaacaagt  
taggatgctattgtccatgggtgagtgacatggttatacagggtgaatgggtgcagggtgg  
gtctggaggagaagacagaatcctacagtcaggggcattgtagtgggcactctgatctct  
cttctccacctctatgcagctgcttctctctcctcagaatccagacccaaattttacct  
tctgctgggaaagccttctcctctatttttgttgcaggtggcgggggcncctggac  
ctgggattcccagcttctcctcctaactgtgctcctcgtggccttagacccctctgtg

taacacagacatcagtcaggctctctcaggctcctaagacctggacgacaggctcaagct  
cctatttgcacgtgcaagtggaaagcttttgcagggtgttgcaagttcccttgtgc  
atgactgtgcatgactagcactgactctctcctgatacagcatggtagatctgtgtgtg  
gtcatcaggacattcaanaagtaatgccccgttctgcacccacagaaggcagtcctt  
tccactgagtccttccacacagccaagctgacctcaccggatctgcctgtggcagaa  
gcaacttcaaagtgagcgctagtgctcctattcttgaagt

>IGR1324a

actgactctctcctgatacagcatggtagatctgtgtgtggctcatcaggacattcaan  
aagtaatgccccgttctgcacccacagaaggcagtccttccactgagtccttccac  
acagccaagctgacctcaccggatctgcctgtggcagaagcaacttcaaagtgagcgc  
tagtgctcctattcttgaagtcctgtggtcacgctacagtatagaacttcttcttctt  
accccccttccattctgtctgcagcttctgtccatcttgcagttccccctctcttctca  
cccaattgcagtttatttctaatacacagagcaatttctgtagcccttttgaacaattc  
attgtcacctatggaccaagatctcagcttctacctccctctagtggtgatgcagg  
tatttccaaaaaaaagtcctagagcaggatcctggctggccacacggctgtccagtgtc  
gtcctgccacaaaggttctaagaggttaaggcttgacatatcagaaaaggaaaggagc  
ctgtgtgacacagaagcctgggttgaggaggctacgctctgtgtactgtccccgggcag  
aggcgggtttctgggtcacctgcattcccaacaccggcctctggtggtcggcagatgtt  
aatcctaaaacccttctgtccccacctcagaggtgaagta

>IGR1325a

taagagggttaaggcttgacatacagaaaaggaaaggaagcctgtgtgacacagaagcct  
gggttgaggagggtacgctctgtgtactgtccccgggcagaggcgggtttctgggtcac  
ctgcatgtcccaacaccggcctctggtggtcggcagatgtaacctaacccttctgt  
ccccacctcagaggtgaagtacgtgtcactagccttccccgtctgggtcccccaaggcc  
cccacactgggcgcacagggtacaggaggagccaagcctctgtccagttctgccttc  
tgcgcaggagcccttgacttctgggagtcaccccagtcaccaacaaggagataggg  
caggtgggagacaccctaagctcagaaggcctacaggagatggagagcacccatcctcca  
ccttactccttctccagaccactccacacctcgcagcttcttgcctcaccctcgcatt  
ttggccagtgggcaccagaacaagnaggggtgactggctaagctggggccaaactcac  
tgacagaattggaattgtgtcaaacaccacttttatgtcctcacccttcaggcctgcatt  
cagtgtagctctgcagagaaagggcctgtcttactgaaccctcagatccagcacgct  
gctgtcctatggaggcatccatgcatacagcagcagaat

>IGR1326a

gaacaagncagggtgactggctaagctggggccaaactcactgacagaattggaattgtg  
tcaaacaccacttttatgtcctcacccttcaggcctgcattcagctgtgagctctgcagag  
aaaggggcctgtcttactgaaccctcagatcccagcacgctgtgtcctatggaggcatc  
catgcatacagcagcagaatgaatggatggaggagggaatgaatgaatgaatgctgct  
ccttactgccacctgccttctcaccctgccccctcaggggcagaatactatggctttct  
tttcttcttcttcttcttcttttttttttgatgaggtcttgttctgttcccaggctgg  
agtgcagcagtgtaacagatgcattgctacngcatcctccacctccagactcaagtg  
atcctccttctcagcctcccaagcagctgggaacaaaagtgtgtgccactatactggc  
taatttttagctttttagaagggtctcactatgttaccaggctggtctcaaacctcct

ggcttcaagccatcctcccaccttggccttccaaagtgtgggattacaggcgagagcca  
ctgtgcctggcttgctatggcttttagagtttctacccaattacctccttactcaat  
ttctagctcccatttttggttctccatggcctttgtccc

>IGR1327a

gaagggtctcactatgttaccaggtggtctcaaactcctggcttcaagccatcctccc  
accttggccttccaaagtgttgggattacaggcgagagccactgtgcctggcttgctatg  
gcttttagagtttctacccaattacctccttactcaatttctagctcccatttttg  
ttctccatggcctttgtccccc aaatctgcccttgtgtcagagcactggactaggagt  
caggagtaccagggttgcacatcagttagcccttgtgtctcatggccccatctgtaaact  
ggaatggggtttctcttgatctcaggatgtaagtgggatgaaaagtgcccaatctcac  
ttaagactgtggttctgaccagagttcagttctgtcttttcttttcagtatcagg  
agtgttcatgcctgttatcctaacacacactcacactcataaaggatataaaactgagt  
ctcccagaagtattatctgtcagttgggtatctgtgttatgttacagatgattccttc  
actccttacaccaaccttggcagttgggtatgtggattaccatgtgtattagttcattc  
tcacactgctataaagacatacccaagactggacaattataaaggaaaggaggttaatt  
gactcacagttacacatggctggggaggccctcaagaaaca

>IGR1328a

gtcagttgggtatctgtgttatgttacagatgattccttactccttacaccaacctg  
gcagttgggtatgtggattaccatgtgtattagttcattctcacactgctataaagaca  
tacccaagactggacaattataaaggaaaggaggttaattgactcacagttacacatgg  
ctggggaggcctcaagaacaatcatggaagaagccaagagagaagcaaggcacgtctt  
acatggcagcagaccagagagaccgcaaatgggcgaaactggaacagccccctataaaac  
catcagatctcgtgagaactcacttactatcacgagaacagcatgggggaaacctccctc  
tgatccaatcacctcccaccagggttccacctccacaggtgaggattatgggaattacaa  
ttcaagatgagatttgggtgggggcacagagccaaaccatcaccatgttcatatgaa  
gaaagtgggaattagagaggccaaggaacttccccaaaggtcacatgctgggaatggtagg  
ctgcggtaccgcaggaagacataagatgaaatgcatgaagaacattctgaaaaagtga  
atttctccagtgttggctttatcgtgagctgatcttgtgatttctgtcactcaggctg  
tggatgcaagttaaaaagcatcagctgtaaccagtcacag

>IGR1329a

gccaaggaacttgcceaaggctcacatgctgggaatggtaggctgcggtaccgcaggaaga  
cataagatgaaatgcatgaagaacattctgaaaaagtgaatttttccagtgttggc  
tttatcgtgagctgatcttgtgatttctgtcactcaggctgtggatgcaagttaaaaagc  
atcagctgtaaccagtcacaggaggatttctgagttgggctggggtaggggagagagatt  
tctgctttgggtccccatagtttctgtaactctggtttagtttcttctgactggatcct  
gcattccttgagggcagccattgtattttatctttcagcttactaaagtatatgaaaag  
ccgggcatgctaaagtgtacaattcaataagtttagaatgtgtattcacctgtgaaacta  
tcagaacaatcaagatactgaacacattaatcacctccaaaatgtcctcatgccttcag  
caatcccttctcccaggcaatcactgacctgttccgtcactatagattagttggcat  
tttctagaattttataaaaatggaatcatagctagtttcttcttcttcttcttctt  
tcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttctt  
caatgttggctcactgcaacctctgtctcccgggttcaag

>IGR1330a

aalcactgacctcggttccgactatagattagttggcattttctagaattttataaaa  
atggaatcatagctagtctttctttctttctttctttctttctttttttttt  
taagagctctgttctgttgcaggctgggtgagcagtgccgaatgttggtcactgcaa  
cctctgtctccgggttcaagcaattgcctgcctcagcctcccgagtatctaggattac  
aggcgcgtgccaccatgcctggctaattttgtatttttagtagagacagggtttgcca  
tgttcttagactggctcaaaccctgacctcaggtggtagcctgcctccggcctccc  
aaagtgcgtgggattacaggcgtgagccaccgtgcccgccagcctgccttcattgactg  
gaataatttttagacgtatccatgt

>Rad50ex15

tacagcttattcactctcctactgttcaaaatctgttgcagaaagagaacaaagagaagtgatgcttttcagaaaaaagagca  
aatatatgtggacaggaaggaacttcgtgtccatgtaacagatataaaattgactgtaaaggcatgtgctcgcaatgtcaaagtctcta  
tgagtacagaaggacacagactgtattacctgtgtctaactgtgctgtttctctgtttctcctggttgactgttgagacagtcgatctaag  
tctattcctgtagcttagctgctgttgcgaattttctttcaacatctttaagttccatcttaagaatataacaaaatgatttctttaataaac  
ttactgcattattcaaaatctttaaaaaattgctcttatcatttttttaaatctaaactataaacatttctagatacaatttagcaaagt  
ttaataggataaaagtgaattaattatcagcaattcaaatgatgtaacaaaagggaagctgactaaagatgaaaaacaaacagaactg  
tcttaatttttaatttat

>Rad50ex11

ttcttaggactgaactaaattgctggatcactgctcagaagagtcttgaacttgatggagcttatgttgagaaatacagtttatttaaatt  
tttatcttttaattccattttccatgaactttctgaagctccttgatgtaagaactaaagtttatcaatataacataccatttcatgacaataaa  
ttattttaaaacaattaaacaggtgaagcatgaataagagatttctattacatctccaatgttgcaacttactcaatttggaagctgtgcc  
ctggctgtgattaatttctttgatttactatgtagccagctctcaagctgtttttgttgggaaatatcccaacagtgaggttaattcatcactg  
tgcttagattttattttctgattgttcatctttgtagcctataggtaaaaaaaatcttttaaaaataaagcttatatctccacattatatca  
agaacaaaaataaattctagactgactaaagtctaaagcttaaaactataaaaatatgaaaaataaataaaatttcttaaggttcttaag  
tctcaagtggggatggcttcttaagccttaagagtggagtaccaagtcgaacaatata

>Rad50ex9

aaggtctgaagctttaaggtctgagtacagtatctttaaagagctccctatgtgatttcaattttcaggctatcgggtgtagaaccaaaaga  
gtcagaagatcaagatattcagatgaattcattttacatgagaataagacaaagttgatgttttattaaaatgctataatcttaggatcaaa  
aatagacaaaatacttctaaaagtattatctttaaattatttagattattcaaacatattcttacagcttttatgagctcctgggtccagtcaa  
gaatcctgtctgaagatccttcaactgctgtaattcatacttcacatttttcagctcattctgcttcttactaggatttctgattttaaactcaatt  
atttctccagtcaggttttctatcttctatctatctgtttttgttcagagctctttttctgaaagtcatttcaaatgcatatgtaaaga  
atgagcattaataatttactaacaatttaagtttttaattgcaaaagggaatatatgtacactgaagaaaaatacaaaaagtacagtcgtgt  
gtgtgctcagcagggatatttccaagaaatgcatcattaggcaattttatcattgtgtgaacatcagaatgtatttacataagcctacatggt  
atagtttaatacacacatagactataggtatagcctattgttatgg

>Rad50ex2

aaaaaaaccagaatacaaaaattaagagtatgacatcagctatataaaacagtatttaaaggaggaggaaaacacatgaaaatgtcaa  
caacgggttactactgggtgctaaaactgtgtgggctgacttccatttctttatagttttccagtgccaagttttctataataagctattatc  
atttttataattataaaaaatacaaaattgtactagcaccattaccttgggacgtgtacaaatgtatttctttgggtccaggagggaatctc  
cagtacaaaataattttagacattcaatgatggcttaaagaaatagaaaattacattttcgttataagagaaccacagaagttaccataa  
aatatgaattcattacaaaaatattttatcatggaaactataaaagataaaatctgacattataaaacctgtaataaaaatatgattaagtg

ttaatgctgtaagttcacagaaatgctatataactaagaagttatcctaataatgaagaattgttacttgggaaaaaataattattttcaactgaaaccctttaaac

>Rad50pro

ggcgcttcccaaagcgtgacccctgggactcctggaatgggggtagtggtgggggtggattggagacccaggaagcgggggtcagttcat  
gtcaaaactattttccttttcattctcattctctctaacgttcgtgtagtaatttcagtgatcacataacatgtgatgacgccattgcagtg  
gcggttaatggaatgtgcgcagtggtattcttgcgcttagaaataccaattttaatttctaattgagtaaatgttgataattataactcacgtac  
acgctctttgaggtccccgtaatttttagtgaagggcgtcttaagaccaaagctctgggaactaaaactaaaagcagctcgtcaaata  
tgaagaatgtagaggaatccattccgatcagtgctccagcaatagatatctttaaaaaataagggaagagaagttacctgtctcagaa  
gtaactgagaatattgctttcttggaaacaaacttaattggagggatcacatttaaggccctagagaaacatacaaaaaattactgaaa  
caatagtggaggacatttaaatgaaacacaaatttgaattactgtagtgtgataattgcctctgcctgccttggaaaaatgtaggaat  
gtttctccagtcatacaatcccaagcaataattacagaacctaatacataaatgtatgtccaaaggatgcaagtggggaagaccagt  
gagaatagctcttctgtgtaccaggttaaaaaaccggaaagtgcagttattacaaaatagttaaaataactaatggaacaaaacatta  
aaattatataggaatgtcttacttggcaagcaaatgtaataaacaatgggaaaagacgaaagaccttttttttttttttttttttttttttttt  
acacataaaatttactgtcttggccaggcgcgggtggctcacgctgtaatccagcaccttgggaggccgagacgggtggatcacga  
ggtcaggaaatcaagaccatcctggctaacacggtgaaaccccgtcttactgaaaacacaaaaaattagccgggcatggtggcag  
gcgccgatggtcccagctactcaggaggctgaggcaggagtaggcatgaacccgggaggcggagcttgcaagtgcagccgagacc  
gcaccactgcactccagcctgggcaacagagcgagactccgtctcaaaaagaatttactatcttaaccaagtgtacat

>Sept2ex1a

ggttcccgccttagctccggccggagcatcaggtggggcccaagacacccgcagactaggctgccgcggcctctccggatccga  
cgggtctcccgagcttgcacactctggttgggtggtcccagcacattgcaggtccagcgggtggagacggcttgggtgggggag  
atctctagggcgacgccgtgccccacttcccccttacgggaaggtttccagcgcgcggaccagagactctcacctaggctcg  
gccccaggctccaggggacacgcagaggccccggcgccaccagccccgagccccccgacactgccgtcccgggtcccccaacgc  
gcggactacaagtcccagcagtcctccgcagctggcacctccgcctcgcgcggagacccccggccgtccaagcggcggggctc  
cggctgcgctcgtggccggggcggggcggggaaggccggtcccgcgggcgggggcaggggcggctccgcggcttctccgccgc  
cgccgccaaggggagtttccaggaagtggccatattggatccattcagccgcagcccccggggcggagcgcgtcccgcagccgg  
ctggtccctgtcgtgcccctgcgctcgtcccagcccacccggcggtgcggagctcgccatggcgccaccgacctggagcgctt  
ctcgggtgagggccccgct

>Sept2ex1b

ggccgtccaagcggcgggggtccggctgcgctcgtggccggggcgggcggggaggccgggtcccgcgggcgggggcaggggc  
ggctccgcggcttctcccgccgccgccaaggggagttccaggaagtggccatattggatccattcagccgcagccgccggg  
cggagcgcgtcccgcagccggctggtccctgtcgtgccccctgcgctcgtcccagcccacccggccggtgcggagctcgccatgg  
cggccaccgacctggagcgttctcgtgagggccccgctggggccacggcgcgcggggaggcgcggggcgcaggagggggc  
gcccgtcagctggcggggggcgcgaagcgggctgtcagcgcctcagggccggcctcgcacaccgggcccagctcaggaccccc  
gcgcgggctctcggccgcgctatcgggggggtcccggagcgtcgggcggcctgccttgcgggcggctggtcggggctcgttctg  
gggcgcaggcaaggctaacccttctgcgggaaggagcaaaagacccgctggtccgggcaggtgcgaagatagagtggcgccc  
gcggggccgcaggtgagggctccgggacactccggaccctatcgcccagggtgtttcttctgcacacttggggaagagtcttagccg  
cacaggtgtcgggataggtacagccggggaggatggaggccccaggatccgagagagtctccacacgagcccaggacagtt  
gcagacttgagtctgaagaccttggctcgtttcttctctccccgctcccccttgcggcgtccccacgccggaatcctgggtgc  
gactccaggcaggtcaggcctcagtggtcgggtctcggcgagccattcgccaggagctggagggaattccagactcagcccagtg  
gcgtttatttgggctccagtcaggctcctcagaaggtgatgtccctggtggtccctgcaggggtctactggcctgagcctgccgac

agccaacttactaaaggctttcataattcactcgcgggagggaggcctttgggggggtgtatctggacatcccctgctgtctaaggctggatctgggtgtg

>Rad50ex5

actacctatttagtatacaagaaattaactactgtacatcactgtgacttttagttaataacaatatataattgctaagagagtagattttaagt  
gttctcaccataaaaaaattgaagtaataaacgttaaatagcttgatttagccagtcacgatgtatacttatatacaaacatcatgctgtat  
accataaagatatacaattttgtcaattaaaaataaaatcaagttaccttcaatggatcaagttcattctcataggatttgacaatttccttg  
aagatgttaactgggcttccttactgtaatctgacacgaatctcacaagcttttcttatattgcttcagataatttagttccatttgatattct  
ttactttctgacctgtgtctgacgtacctgccgaagtgttctaaggctttaatgtatctttgaagatatgaacaaaaatcaaaattctggc  
aaagtaaattatggtatatacagtgaggatattatgctgtcactaagattacagttacaatgagttttaataacttgtaaatgcctat  
gacataatggtaagtgaaaaaaattacatttatactgtcaatcaggtaataaatatacga

>Rad50ex4

tggatgagaggtagtaactgatgacctttctgcttttaatttttctgttaaaaagaagcatccaaattgcaaacacagttcaataacttaa  
tggactacaaagtctatttaagggttacaaacctgtgtgctgaaaaatctcatcaaaacttttgctcaaacctttccttcacttaaggcc  
aattagaatcttctgatgacagaaaatgacattatttagcacagccttggaaccccaagagaactgatattctcggtaatttctgca  
cacttagagctcagactgacctttccatgcctacagaaaatgaaaatcaagaatatatgtaaaataaccttcagtgatctattctattg  
cttaataaattcactgtacttctttaaagaataaaaaaaaaggcccttcacctatcccgttagaaatggcttcacatgctaaaaagtgt  
aactctaaactatttaacgggtcacagatgaaaagatatgtaa

>Rad50ex25c

gacccattcaactacttcaaattttagttggggaaaccaagtcacagagagaggtcactggattataaagttaaaagcagagcca  
aacatacatctcaccatttctggatcctcagatattaatactcagttttcaaacacatgcaaggaagtaaatcagaggtacatttaa  
ctatgatttaaaaaataccaaaaccataaattttcaaggcagtaattatctccttcaacagtgctttgagaagaagcatgcatttgact  
ggggagggagggcacagagtcgagtcctggctgtactgctgaacctgaaggcctgacagaggctgcctggaatgggatgaagagc  
agcaaatcagaaacaggcaatctgtccaatttcagtgaaacaagttcatgattttagaacctctcaacatccaaaatcctagacacaat  
gttctttgaaagaatatattttctattgactaagttgatagagaataagttcttattatacactttctgaggacctacatttctatggcatt  
aaatcttgatatttttaataacattgaatcccaggagctaacactgcatttcaaatctctgagcactgatcgtgtcttttaactctgt  
agaatttctccacatattcagaacgtcctaaaagctccacaaaatctcatcatgagtgattaccagaagctggaagttacgctgctgtga  
gcgacttttattatctgcaacaatatattcagaacatatttagtaaaagacataaccccttcttgattgaaaagtcaccgcaaaccttg  
tcagacacatgaactc

>Rad50ex1

acacctgtggagccctaggacgcttctgctcctaaggagagttctcaacttcccattttattctccgaaagatgtagcgacctgtaaact  
gaaggcgggtactgaagacttaccgtctttcccgcccatgggtccaacaaaattgtaagggggctgaagaaagtataattgctt  
atctttgtctctatttccaaaactccgcacgccagaatgctcatcttttgatccgggacatgttgcaaacgttttaattctcaccaggg  
acctggagtcacaaaaggcttaactgaggccgaagcaaggcgtgcacgggacgtgagacccgcgaatctcagggtcaggaggatc  
cgggcggggagcgaggccacaggactgccaaaagatcctgccaccaacagcgggagagagggggcgggggatggagccttt  
cctcccacaccagctgctttccccgccgtggggagagcggaggcggggaccagcctggggctgcccgggggacgcaaaagc  
cgtagccacaatgcgaccccgcaaccgcgcactcacagcttctgctcggccgccctgcggatcacgtgggcctctaggcccgca  
cgcgtccacgccgctctctggggcacgccgggaaatcagagtcgccgggtgcgtgcgcagctccgacttccgggtgcgggtacgg  
cgaagcagagggctagggtgctgggtgctgttgccaggggcagcggacttccggatcttctggtgggatgggcagcctggagaggc  
actgacttttg



>Rad50ex3

aagtctattgaaaaaatttaatatgctcccctaaacttatagtagaaaacaaccatcaacttacagacctaaaagactgaaaatgaaca  
gaaattcaaatatcatataaacacctactttgttctagtaatgactcctccagagttttaaattctgtcttttctgtttctgagtacacaccata  
gatctttgcacagctataagtttccattgacatcacgaaattgcagacgaatctgggctctcacatctgtttcttgagcaacctttgaagg  
aaaacacagaaaaaacttatgttactttaataagcaccagtgttggttctgagaaaaaggcataagcaatcttaccaaaatgagggaa  
caaaaagaaaaacatccaaaatgagtgatattttacatgctatccaaaatatagaagaatactgtttaattaattacaaaaatgatatact  
atcta

>Rad50ex8

agattttatcctaactaataagaaaaatgccaaaatggagtgcaacaaaaattaaaacaattcaagtagagaatatgatgcaaca  
aaataacaatactgtatttcaaaatacttgccatcagttggttggcagttttgcttccccttctgtctctctcacaagtttgtaaaattt  
taatctgtcttctactgaatggtccacgctcaaaagccatccaattctagctgtgttgccaaagactgaattaatgaatctctagctcgat  
gttcttgatggcgatctgctgcagctgtgagcagcttttaaaaaaaatctcataattttttcaactgggtgcttaaaaagttagata  
gctgcagattcacgagttataaaaaataatgcagtggtctctgtacattttgccagtttctccaatgataacatttgcaaaactgcag  
taaaata

>Rad50ex7

tgtatagccttttaagattggcttttctcagcataagtccttgagattcttcattcatcacagaaaatgtataacatcatagtaggaaaa  
cgaccaataaacattttgtcctacctgttcaacaagcagttctgatttttctgattgagaagcctagattctttatttagttttccagttca  
cgatgacagctaccaatttcttcttctccttactgttctctgggtgattgtgatataagtcatttagttgctcatcagtccttgaaaaacc  
tgtgtaacaccaaataaaaagctttaatgtacaaacataagaaaatatgacactttgaggtatcaaatataaaccaaaccttattcaata  
tcttcattttaacatatacatagaagtaacaagatctgtattgtttttccaatgtggatggcaaaatggattcaataaagttcatt

>Rad50ex6

atacatagaagtaacaagatctgtattgtttttccaatgtggatggcaaaatggattcaataaagttcattacaataatccaaaattt  
gaagcagaacaaaattctaccaccacaaaccttttccattttctctccagttcactattatctttctccatttgccttttggctatccaagg  
cttaatttcattgtcaagtttcattatttttagagagattatgttcaatttcttttagacgattctgaaaaataagaacattacataaataaact  
cactatagcttacatggctgatagatgaagacaagtaagatactccaggccaggcatttagtaaaagtgtatctcatttaaggctaacaat  
aacactgtagagcaggcctagagaaactgaagttcagagacattaagtaacttgcccaagtcctcacagctagtagagagaagcag  
gaat

>Rad50ex10

gctcacttagcctctaaaatatagtaataccaacttaataccttatagctctatgacttatgagtgaaggtaggctattttaagtagcagac  
agtataattagaacaaaaagaaaaatcatactttgtctttggtcagcatctccattgggtacgtgttggtatgatggttaactgctccat  
ctcctgggtcaagtttacgcagggtcctgtctaagctgcttttcatatttgagacttattacttccattttaagggttctacattgctgttttct  
cagccttgcttaactcacgttcttagtcaataattcatacaaatgcaaagggtgttatattttgtgcaagaattaaaataatgacaaagtgt  
attgaaattaactact

>Rad50ex12

tgaaatccaagccattaggtccataaccaggtttttaaattccccatccttaacagttacctgtgaatgaaaattcaaagggtgtcaaagta  
tcttgataatataaagtagacaacttacctcgctgttttgatgatttttcaatttctctttaaagcctgtctaaatcactttcaaaatctggcta  
ccacaaacatcaaacagcttgcttcgtaactggacaactgcttcttcttttagttcattatttatatgattttattctgctcagatgaag  
ctagttccttgctaaaataagagcaaatatggattttcattttaaaataaggagaaattagttgaaaatttgagtaggcaaaaacaagacaa  
attctgccaacaatcat

>Rad50ex14

ggggaattctaaacacaacctgtacctgaatactagctactattttaactctcacacttcaaattcaagccaccatggaacaagttttattc  
tgccttaaaactacaataaacttacctggaacctctccataattgtaacatctgtcaggcactcttggcactttcttctcaggcattattgtac  
ccaagagtgtttctgttcttctatgtcgttcttaggcgctgtatgtctctattgacattctgcagttgtttcttaattctggtatttcccttctctt  
caaatcaattatgctttgcctaaatagaaaacacaattaaaaataaagtatctgatgtttctcacagftagactgaggftatgtatttttagga  
agaataccacagaagtgcattgtgttctttcagggtatcatatcagtggaatcatgatcaatatgtctta

>Rad50ex13

cttatcatagaagtgatataagacagggcataccagctcagagtccttactgagtaactaccatctgccaggcatgagatgggtacctt  
ttacaatgtgctgctacatgtacagtgaaggtaaatcccattcttacctcatgggcacaagtcccagcattcatcacgccgcttttctttt  
tttttagctctgattctgttgacttgagttatctggagcaagtcgcagtttagactgcaaatcactgatgacttctgtaactcagcctctgtc  
tgaaaaactctctgacaaacggggcaacatgactggtttctgtctgttagctgagtaatgaactgggagtaaatgctgtggctccagcc  
agcatggctattttaagaaaataaattatcaccaatgagaaaaaacataaaatcacagtattctgaatacgggtgtatcttttctataaat  
atatg

>Rad50ex17

tatgatcgcagacaagtccctttctcacctataggaattgattaattagtctcatttcttaacttctattgtagatcaagcagcaaaaataattta  
calcaaatccctgttctaaagaatttctaattgcaaaattatacatgaatctgaaaatactatttatctatgctatttaattcatgtgaaat  
aagtgtccgacgtgggtgctatgaacataagtttaatacagatatttgataagtaatatataaatgaatcttactttatcctgtgctattttgtt  
gcttgtattttttgttgattaattcttcttttctgtcgtgaacttttccaatgtgtttccaaagggttacctgtcttttagcatcctaaaaatat  
aaaaagataaaagtattatataatattccattatcttactttaggggtcagacttcacagtcttaataaaagcactttctatgtgccaggctct  
aaaagtcaactcatttgcctttcaatgacctatgaggacagtaccatcatttccagtcctata

>Rad50ex16

gtaggcggatcaccttagttcaggagtttgaaccagcttgcctaatggcgaaaaccgctcttactaaaagaacaaaaattagccagg  
catgggtggtgcacgcctgtaatcccagctactccagaggctgaggcaagagaatcacttgaaccaggagatggaggttcagtgag  
ccgagatcgtgctactgcactccagcctgggtgacagaacgagactgtctcaaaaaataaaaaataaaataaataattaaataatttta  
caaaaaacatgatgatattcttacctttatctctgtacaaagactgaacttcagtggataattccacagtctgtcctccagttgctga  
cgacgttgcaaattagtggatactgaagtttctcagattttagctcatttgtgtacttttagatgttgaatctgttccgtgctgctgtataa  
gcttacgattcaattcaatcttactagaaactacacaaaaacatattatcacagtaaatatgtaagggtcatagaaaataactattgtatcatt  
cttcccattttatcgggtctatggaatccacaaatgctatttctgtgggccccaccactgcaacaaaaatacaat

>Rad50ex23

gcaaagagcttcccaccattcaggtgtagccttgggtgcttccactgcactgatgttgtttctctttcagttacttgggtgagttggctc  
cccaggcttttgagataacctgcctttgtccagcactgcacgtcctcgcataccaaggctgtgtctcccttcagcatcaccactcggtg  
gtataattccgccttttatcagaagctgatacatttcatcggcatcagaccgtatttctatgtattcaatatctgacacaggaagaagaat  
attttagaggaaacctatgctctgtagccttttgcatttacaacatatcaagtaagcctaggaacaacagatgaggctgacattaccaga  
ggaaaacaatggctggtgtg

>Rad50ex22

tgccaagataagaattcttagaaaatctcaaagacatgcttagaaaggggtccaggagggtaatgctggcatgatgagaggtcataag  
gggaagagctgcggagagggcttggaaagagcatttgtgataccatggtactcacctgtccacgataggtagtctgccacaggt  
cacgtataattttattgatttcttccatttctactgtgaaatttcattattgctctggaaaagggaagtcattgggtacttcatatataaaaaat  
aattatgtgtaatagtaattataaaatacaaaaatatataataaaaaatagaaatataaataacttcccaatattttcaatggtaaaaag

tagaatatagtaagagctacaaaaataaacagcagcaaaactttgctgcttggctaatactgaaaattggcaggcttatttctagtgtccaggggtacccttc

```
>Rad50ex21
```

gatgactaaagtatgtagttaatattaactgcaataagaaaaatccccagtgtaatacttactgggtcaagagctctataataaatatccagat  
ccttggtcacaaagttctgtgtctcataacaatcatcttctctatacttttctcagcatcccgaattgtgggtctcgaagttctttctaaa  
atgaataatttcttctcataacctttctgtcgcctaataatgccaaattatgatttcttttatattgtctatgttctctccaacttctgatgttcaact  
gtaaaaaagaaaaatgacaaatgaggaccatttttagctttaacaacctgaagtggaaaagtcatagatttcttagataggtaagtat  
cattctccttagcaatcagtataattataacagagtctctccttgcctt

```
>Rad50ex20
```

acactgttcaccttctagtaactctcaaaggataccaggctgaggctaaaattcttttaaacaggtatttaatatcttcacattccagtaataaagacgtttatttaaactgaagattattttaaaagcataaccttttcatttgcaaaacctgcatttgaccatttccttcaaatgtgttttcttcttcaacttcttttagttcctcatttcttttctaaagtaagggtatctttagccaccttcttgtatctaaaggtaaacattaaattagttaaca  
aaaataaccaaggtactaacaatgaaatctgtaacaggcaactggtgacagcaagtgccatttctgtcttacttagaatcatgtgaaattca  
acagagggagaat

>Rad50ex19 18

gtgtgagccaccacgcttggcctctttcttttgcatttctattcaatggatcttctattgaaaataaaactatagaaaagaatgcataggt  
gtaagtgtatcataagcaaaacagacctacctctgtgtatcaatatcttgtctcatgagtctcatatcttcattatcttttcttgtgttctc  
gcattcacttagttgagctattactttattaagttcagtttcttttgcacaaaaaagaaaattctttaagcacatgaataaaaaatacaatcaa  
ataaataattttaagttttaaaattaccttcttatagtcgtcttcccatcttgaatataattctcaatgtctttcatatagccatgaatattttaacc  
ttctctttaatatcattcagctgtgaaaaaatattcattaaattacactggttgtacttaagggcacataacaggagagcacagtaaaaca  
ctggctgggaagtgtatgaacattgggttccagtttccaccactactgaattttatgatcgcagacaagtcctttctcacctataggaattg  
attaattagtctcatttcttaacttctattgtaga

>Rad50ex24

tatcacaacctgtcccaaatgtgagatacttactcaaccagagcatgtgcaagagatacttactcaaccagagcatgtgcaagagatt  
caatgttttctcggtaagatttgtgttggctatccaaggcaatgatgccacagttgaggcagaacgtttcagccagggccaggcga  
atgatgagtgaggctaataacctggaaaaaagcccctatgtgagaagcccagcacagaccttctcatctcatggcagggaagcagtcct  
gacatgatcttttcagcagggaaaaagtgggaaacgtcacaggttactgttaggtaaaagcactgccctctgggagagcccagcactg  
ggaccagattcttatgtcctcca

>Rad50ex25a

agataacattaagaaaatattattgcaaaactgtgagtttgctaaagctaggagatgttgaaatttatcaaataagctgctagaatttttc  
agaattttttcaccttcggtttattatagtgatggatttatcaacagatttttcattttctgaaatcttgcattcttgggataaaaaatcttggtt  
attgtggatgttaatatatgactagaattgatttgccttaattactctgtgattacatttaggacccccccaccaccaccacc  
aggatactctgtcttaaggtccttagctttaatcacatctgcaaagtcttcttctgtataaagtaacagtcacgggttctagaaatcagga  
cctgtctatcttgggggccaaccatttaacctagcacagatagatgccttaggaccttagggcttaattctcttctggaccagttgaga  
aaagctgtctaggaacaatgctcattatagctacagatggcacaaaacctgccatgtgactgaatcaagacccggatggctctggc  
tgactctgaatgacaaaactctacaagcataattcaaaagcgtgtgacttggttgcattctgtgtggaatggaaggattcaagatgtca  
gctggcaa

>Rad50ex25b

acaaagcataattcaaaagcgtgtgacttgggtgcattctgtgtggaatggaaggattcaagatgtcagctggcaattccaggaaaaact  
gtgattaggcttttcttagaagtggcatctgaagagcaaatggagaggcctgttctccaggctgtggtggaccctacaggagcaggc  
cttgactctgtgagtggcctggcttcccatggcaatgccacttagagaggaatcaggattgatggtgaagccagtatgcta  
cacaggatagacgcagaggagtgttacaggcttctcacgatgggcagatcaggcctcaagtggtcagagctttccaaaggtgggtg  
tgcacagtggagaatttctctctgtagagagagctctgagcttgatgaccttgggaaggatagtaggagaagaaggtggtggg  
tactgacttagatgattacttaaggttctgtcaaaacttgagacccattcaactacttcaatttagttggggaaaccaagtccagag  
agagagggtcactggattt

>Sept2ex10f

gtgttggaaatttgccttcttagctgagaccaaattaaccttgggtgcataaagtgagcttaaaacttggcactgttagtaagttagcccc  
catagaatgtgacctgtctgcagagtctcattaccctcttttctcattgttggctttattagggctgtctacaggatcatgtg  
gcatttactatcatgtctttatcataaaccatgttgggttagagaagaatcaccataaattcgttggccaaattgggactattgagaga  
gaaaggggatgctattaattacaccagatcaaaaggcataaaccagacctgtcccaggccgatgtggaatatgttcttctagtgtg  
gtacctgatctaggtggttgaattgtcattactgactgcatatgttgtgtatgttaaatgtgggctccctgttaagtggggctcatg  
galacgaggcctgaggaagtgtggcttctgtctgttacctgtaaacatgctttctaaaattgcttcacgtgttaattcatttactcctgcatt  
cattgactgttttgttcttccattcatttacttatttttctaaatttgcatttattttagtttgggtgtcttttgggcagtagcttt  
tctgatttaacgttctgagcccataatc

>Sept2ex10c

ccagcgttttactgtgaatgtaaatggaacagcagcccaaagctgttctgtgccccagagggtgctacctgtagacagggaaccaact  
ccatgtgtgtgtgtaagtgttgcactcaattaagactcccaagcaaatcctgcatattccaaatgtaaagagtactcagtgggaaaaag  
gtgttacctcaaagtcattgtcttcttctgctgggtcacagggtgaagagatgaaggtgtctgatgtatatagacaattaggga  
tgagcggcaaaaggagctttcccttcagctgcactctaaaggggaacattttaagggaagtactagcagctttgacttctctatgctcctgt  
tggttacaagccaccaagaatgtcagtggtgagaatacggcctggtaaatgggagatgtaaatgactaaatgaaaggaagggtag  
tttaattgtgaagcaccgtgctgggcactggagctaccagaggaatgcacaacgctccctcaaggagctcacagtctagcctact  
ccctggctggaagcctcaggaagacgtgctaatttattgtgaattggtagttgctttcatgccctgtcttcttctcatgaccatt

>Sept2ex10d

caacgctccctcaaggagctcacagtctagcctactccctggctggaagcctcaggaagacgtgctaatttattgtggaattggtagt  
tgctttcatgccctgtcttcttctcatgaccatttcccccttctgtctgcttgcattattgattccaggaccaagctggttctctct  
gccttctgagatgatgttctgctcaggagagaagtggaggggtgagctgtgtgtgtccaccaggcacggccagggaaggagcagcc  
ttacctgtgaggggtccatgctccagcagcagagcagggtctagtacaattcaacttttatgctatgaccaggggtggtatctaaatt  
ttatggggctgaaagctgaattattgaaagacttcttaagaaaaacaatgttaataataaattaggtacagggtcttggaaagggcc  
ctgaagattaagcttcttagcgtcacataaagtccgtatctggttgcaattgaaaactgatgctcagtgagggtatctaaaaggtaaa  
ctggcat

>Sept2ex10e

cgtatctggttgcaattgaaaactgatgcttcagtgagggtatctaaaaaggtaaaactggcatatccagggcaaatgtgggtgccaat  
ggctcatctctagggttaatttattgtctgaaagtgtatgcagttgggtcagagcatgacctttaagatagcctctctcagctaacatttat  
gaagatgaggcctggtgacctcagcaggttcattggatacataagaatgagaattcctgggtcatgggccaacctaggactctggagt  
atgcagacttggccattcgtcattgtggcctgcgggtgcacccaggcatactgaaaggccatactctgggtggtgctgctgcggg  
cctaagccttccaggtatctcaggacacttgacagacttgtgttctggtctgagctgcctccacagggtccctccagcaagcctcact  
gcacctctccctgctgttgtgttgaatttgccttcttagctgagaccaaattaaccttgggtgcataaagtgagcttaa

>Sept2ex10a

cttgctgtcttttgccttctgtttgatttggctctgcatacttttaagtgtctgttttgtttgtttgtttttttttttcagttaacgcacgcacag  
acttacatgtcaagagtggaacttttagactttcatgtgttaagttgcttgagttacacctgtgaccttctcccataaacatggtgtgaggacg  
gactgggagccggtacagactccagtggtttacagccttgctttcctccaccgacctggccccaggctgccccggcctggcgggc  
caccctctctatgcaaacacgtaaaagccatgaatgctggaatccaaactgacgaggttttttttcagagccagtggtgtgtcttc  
catttacagtgtcactattccctgacggagctgttatgtccgctctagcgaaggccccagccgggatgctaggcctaattgttcagcgt  
ggagatggcaactcacgtggtgccttaggtgcagctgctggtctggtatacatgctgca

>Sept2ex10b

ttcagcgtggagatggcaactcacgtggtgccttaggtgcagctgctggtctggtatacatgctgcaaaattcaccagttccctcat  
tttaatttttctaacctacagcttaattttaataactttaaacacttctaaatattttttggcaccagcgtcaagacaaataatctctccc  
attattttcataagtaaacacagattccctgatttttaaaaaactaaaaatacagctaaacctttcttatgtataaagtatgcctatcatatacagg  
gagagtggtgtaataaacttctgtaatgacagtgtttggcatttctttatggatggaattggaacatgaacaagaccatgtccagcgtttt  
tactgtgaatgtaaatggaacagcagccaaagctgtgtctgtgccccagaggtgctacctgtagacagggaccaactccatgtgtgt  
gtgttaagtgtttgactccaattaagactcccaagcaaatcctgcataattccaaatgtaaagagtactc

>Sept2ex8

ccacatgattctacttcttggctctgccctgccctatcccatccatcccttggcctcttttcttgggtctccacagcctac  
aagagacatacaggccaagagggaaggagttcctaagtgtgagctgcagaggaagggaagagatgaggcagatgtttgtcaaaa  
agtgaaggagacagagctggagctgaaggagaaggaaaaggaggtatgtccagctgggggctgggatggggaagctgaggg  
aggggaaggcctggctgagggtagaggtgggggtgccttctggccccaggctcaag

>Sept2ex9

ggggctgggatggggaagctgaggaggggaaggcctggctgagggtgagggtgggggtgccttctggccccaggctcaagccct  
cctcttgcctcccgcatcttctgcccccttctgatgccagctccatgagaagtttgagcacctgaagcgggtccaccaggaggagaag  
cgcaaggtggagggaaaagcgccgggaactggaggaggagaccaacgccttcaatcgccggaaggctgcggtggagccctgca  
gtcgcaggccttgacgccacctgcagcagccccctgaggaaggacaaggacaagaagaagtaggtggcaggctgcgcctgcgc  
tggtctcttctgctcctgtgggctcttgccttcttctgctcctcactccttctcgtctcctgctcgcctctcttaccctttcctgttg  
gttttccctcatcttcagtggctctccccccagctt

>Sept2ex7

ctgccctgctgcctgtagtaccctgtgctgtttcctcctcatgccacctgcgtgectacctgactctggagtgtccccgctgcatgcc  
tgctgatacccccaccggccctctgctttcagtgagaaatgagaatcactgcgacttcgtgaagctgcgggagatgttgatccgggtg  
aacatggaagacctccgcgagcagaccacagccggcactacgagctctaccggcgctgcaagttggaggagatgggctttcagg  
acagcgatggtgacagccagcccttcaggtgacagcctgagccagagtgagcctgtcttcacagctgtggccagacacaccacct  
ggcatctgttccctgagggaccccatcctcttaccctcgtgcc

>Sept2pro

ggaggcatagttaagtaacttgcttagctaaggttaaaaagctagcaggattccaccaggaaggtttgccatagatccagctaccctaa  
ccactgctctgctctatttctgtagataactttaatacagcatgggaacagcaacatagagagaggagcaaaagtgaacattgtcag  
gaaggtccagcggaagtgcgtccaccttggggacaagctacagtttgcttgggagagtgaggaggggaaagccaaatcagggtg  
acaaggtcaaacagcagagagggggctcctttaagccaggtgtgctaagtcgaacgtggtctttaggcacctccagtcagcacaag  
ttctgagtaggagaacaggtcaggtgtctctcagcatactgggggtgaggggtgtgtgtgagggtggaccaacctgggatgagg

2825.1025-002

ccagtggggggtaggggggcaaaccttgccacattcccagaaagagcagagagaaaaggcagaggggaagagaaagaaacgggggtt  
cagaggatttgggagctgctttgtatagattgtcagtgagaaggatacagaacctcctgaggcctccgacctggcgtlaagtgttaatt  
ttctgaacgttttgagcagtgacattagcggagagaaacgtgcacgcactgggagtggtcatcctctttgcacaatggtggaaccattaa  
gacgttgcctaaagcccttgggacaggcagggtgatggacacttgcaatctgacgccttgaccgtcgagctccgcttttctattgcagg  
aatcccagcctaaactgcgcacctctgctcgttggtgcacaaggagccgaaggctggtcccttggcgggaaggccgcctggccgg  
acgcgcgggtcccgcggggttcccgccttagctccggccggagcatcaggtggggcccaagacacccgcagactaggctgccg  
cggcctctcccggatccgacgggtctcccgcagcttgcacactctggttggtggtcccagcacattgcaggtccagcgggtgga  
gacggcttggtgggggagatctctagggcgcacgccgtgcccacttcccccttacgggaaaggctttccagcgcgcggaccagg  
agactctcacctaggctcggccccaggctccaggggacacgcagaggcccgccgggcaccagccccgagcccccgacactgc  
c

>Sept2ex2

ggggcatcgggctccctctggggaaacttggcctggagtggtgctcgggtgtactcagggtgtgtctgagattgttgagaattcaga  
catcgggtgggctgttctactgttttaactcagatttagcggccacccgcagcttgaccttttccccagtgggctcatgtcttctt  
atttctcttggcagaatgcagagccagagccccggagcctctccctggcgcccatgtgggttcgacagcctccccgaccagctg  
gtcagcaagtcggtcactcagggttcagctcaacatcctctgtgtgggtgagtgtcagggcctggcctcagacagagggtgggtga  
gaacctctgggagagggggtgttcttgccccctgttgagctgaaggggggttcccaggcaga

>Sept2ex3

agttcctggggaatgggggtgatgaggatggggtggcgccctgcccccttctctatccaggggccatggatgcctgagccctgc  
ctggcctagccaccagtcaaggacagcccatttccagcctatgacacccacttctccccctctgtcctcactgccaggggagaccg  
gcattggcaaatccacactgatgaacacactcttcaacacgaccttcgagactgaggaagccagtcaccatgaggcatgcgtgcgc  
tgcggccccagacctatgacctccaggagagcaacgtgcagctcaagctgaccattgtggatgccgtgggctttggggatcagatca  
ataaggatgagaggcaagaggcggggaaggcgggccccaccagcctcctccccacccacctacattggccccataacagtagcc  
cagccctcacactgcagggggccaggaggggcctcttggggaatatctgaggctctgtgtcaccacagacca

>Sept2ex4

atctcaggcagaagctgttcccagaaagaaaaggccagggggcagcctggcttggccccgagccctgagcccccaagcccaa  
gcccctgatctcagctggcagcctcctgggtgatggagctgtctgtagtacaggcccatagttgactacatcgtgcgcagtttga  
attatctgaggaggagctgaagatccgctcgtcttctgactaccatgacacaaggatccacgttgcctctacttcacagccc  
acagggcactccctgaagtctctagatctagtaccatgaagaaactagacagcaagggtatccctgtccccacctgtctcagagct  
ccatagcttctgtcgcgatgcgatgtggtggctgcctcagcctgaacaccatggtcctcagggacctggtcgggggcttctggtg  
ccccattggc

>Sept2ex5

tctcttggcctcttccccctgcccagggatatggcctgggcatgtctatccatatcctgggcatggcatgggaaccaccgctcaaaa  
gagccaaccagcctgctgtccccctccctgatcctggcaggtgaacattattccatcatcgccaaggctgacaccatctccaagagc  
gagctccacaagttcaagatcaagatcatggcgagttggtcagcaatggggtccagatctaccagttccccacggatgataggct  
gttgagagattaacgcagtcagatgtgagcgttgggtgagggcctcagggccttggggccagagggcgaggagccggcacag  
atctgacacagccccaggagactcttgtccccaggattccagccttagcttctccaggacagaagggtgggcatctggagctggcca  
gtcctacatctgtgggcaggggacaggaaga

>Sept2ex6

ggagttctgggacatttctccagaagagagccaggaagtaagcatctggccctggagcctttgttcaggtctggctgccccctccctag  
gaccaggggcagggagggagagctgtccattagtctgtgtcagctcagggcttacgcataccgggcccccttcaggcacatctg  
ccctttgccgtgggtgggcagcaccgaggaggtgaaggtggggaacaagctggccgagcacggcagtagccctggggagtggtgc  
agggtgagtggtgacaggaaatgcacctgggggtagaactgagttccctggcctgccctgctgctgtagtagccctgtgctgtttcct  
cccatgcccacctgcgtgcctaccctgactctggagtggtgcccgcctgc

## &gt;IGR3000a

cgaggtaaacaagtagggggcaatgatgctgccactctggaggccgtggatgtgaccc  
ccaccgccatgttctgaccagggttgggtagagctcagcagtgagacatacagcatgg  
agaaagcagaggtgatcccaatttcccagcatgaccagaccaatggataagaagtaat  
aatctggaaaagagaccgggtataaacaatggtgcttttagaaatgatactttcttatat  
cagttatttttattgtcctttttgttcagtgaggagtacttttataacataaatatatt  
cccaaaatagcattttcttcaaatgtcctaataatttgggcatggacaaagatggagct  
catgtgaggggtggctttgtactttgttctactgttattctaggtcattaatgcattcag  
tgacctttgtccactgtcctttgtttgttaaacagttcatgggtaagctattagcat  
gttaatatagtttaagtttatcttcaaaggaggaggaaccaatcctttctatcctctttctt  
attattaagaaatatgtatttctattactatcaataatttagtgacattttaatatatg  
agaacgtcagacacaaggggaaaagggaagcatatatcctttgtgtgctatttaactac  
ttaagattcagaccagaaaaccactgaatgtatcctgga

## &gt;IGR3001a

tctcaaagaggaggaccaatcctttctatcctctttcttattattaagaaatatgtatt  
tctattactatcaataatttagtgacattttaatatatgagaacgtcagacacaagggg  
aaaagggaagcatatccttttgtgtgctatttaactacttaagattcagaccagaaa  
accactgaatgtatccttgaaccgacatgtcctactcactgaatactgaatatacacc  
cagggaaaaatgtttgagagtagccagaaattaggaatcatgactatgagttaaagggaga  
tgttaggtgagtcctttctgtgaaggggatgactgggagagttactcttctctttggtgc  
tttctgcttctctgagactgtcttctgtttgggtagttgtttgaacacaggaaaca  
acatacgtagttagcaatcacctgtctaattgacttatgaatggcttatgatgtaaaggc  
tgaataaacatggagcagtgactcagaagcagcctagtcaatatgtgggtctttctggt  
aagctgttcatcttggtaacttntaccacaggtaccagttgaatgaagagaagcaca  
cctcctccccagaacagtagtgcagctatgatataacgcctgggcagggttcgcaatagc  
agccaggctgtaatgtaagctggaattcaatcaaggcag

## &gt;IGR3002a

actcagaagcagcctagtcaatatgtgggtctttctggtaagctgttcatcttggttaa  
cttntaccacaggtaccagttgaatgaagagaagcacacctcctccccagaacagtac  
tgcagctatgatataacgcctgggcagggttcgcaatagcagccaggctgtaatgtaagc  
tggaaattcaatcaaggcagagaggaacagttcaggtaggcatctccatgtaaatagg  
agcatccagagacagagcaaaagtaaccactgaggtcagcatcctgaagaagaaggtaa  
aaatgacaaaagggtggtgtgaatcgcctaaaatttatgatgggtcaagaaattctcta  
tatcttgtgtcttatnnatagccactaccctcattggctacttaaatgtgaataaatta  
aaattaaataagattacaaattcagttccttagttacactagccacacttcaagtgtca  
atagccacgtgtanttagtggtactatattgaacaacatagatatgaacatttccgtc  
actgcagaaaagttctatnggacagtgtgctagtctagatataccaatattcaacaataactt

ttctcagctagttgattcaagttttcctatttctgaatagttgtacctctcaatct  
cttagagctattatatgaagaaaaatattagtcacatca

>IGR3003a

gctactatattgaacaacatagatatgaaacatttccgtcactgcagaaagtctatnng  
acagtgctagctagatataccaatattcaacaataacttttctcagctagttgattca  
agttttcctatttctgaatagttgtacctctcaatctcttagagctattatatgaag  
aaaaatattagtcacatcagtgaaacataaaatccagatttcattcttaacaaaaaga  
gatacaagggtcactgtgggattcacttagaataaattctgattnnnttagggaaaa  
gagtgaatgtcccctaactcctcaagtatnacagnctgcagntgtatattnngtcatt  
atagttaacttccatgtagaagcttctgtgggccatgcgtggtnctcatgcctgaaa  
tcccagcactttgggagaccgagggcaggcaaatcacctgaggtcaggagttgagaccag  
cctggccaacatggtgaaaccccgctctacttaaaagacaaaaattagccaggcatggt  
ggtggcatgtgcctataatcccagctacttgggaggtgagacaggagaattgctgaac  
ccaggaggcgaaaggtgcagtgagctgagatgcaccattgcactccaggctgggtgaca  
gagcgaaactctatctcaaaaaataaaaacataataaa

>IGR3004a

cccgtctctacttaaaagacaaaaattagccaggcatggtgggtgcatgtgcctataatc  
ccagctacttgggaggtgagacaggagaattgctgaaccaggaggcgaaggttgag  
tgagctgagatcgaccattgcactccaggctgggtgacagagcgaaactctatctcaa  
aaaataaaaacataataaaaaaaagagcttctgtgaaaaataactatgtaactga  
gtacccccattttctaagagatagttttttctctctctcttcttcttcttccctcc  
tttctgcactttctacttagctctttagaagtgcattatagcctttaacctctctt  
cactggacactccctgcagggcaaatctactatgtgcttagaagctccagagtgg  
aactctcaccgccagatttctcaagcgatatactcaattccaactcaaagtatgcc  
tgctagagttttggccacctatacaacctgtttctgcccatgaaggcaccacntcaact  
gcccagtagataaggcagcaagctagcctctgatccctaccctgctcgcgtcctccct  
gccttttagaagtgcctgctttccgcttcaaaaagaggagcgggtggtaccctcaggcag  
gaagccgataaccttctccctaagctagctttggaataaa

>IGR3005a

tatacaacctgtttctgcccatgaaggcaccacntcaactgcccagtagataaggcagca  
agctagcctctgatccctcacctgctcgcgtcctccctgccttttagaagtgcctgct  
ttccgcttcaaaaagaggagcgggtggtacccttcaggcaggaagccgataaccttctccc  
taagctagctttggaataaaaagtcactttccttacatcagactttgctcttgttaattg  
gacgctgcaagctgtgagtgactgaacctgagttttgttacaactgcactatgcagaca  
ccctgtgtagaaattgcttattataacatgactgagaagcagaggatatctgaaaaa  
tgacttcaggaacactagtggtatcttttacacatactagaccaaattagataatacaa  
ggactaattcataaacacaacaaataagtatgctcaagggatcttagtgattttccatt  
tagtaataggagtagtttagatagaactagtgactaatttttattagcttagtagcacc  
actaccaagaacattgcatcagggatataggctgaaatgtaagaactaagaagcccat  
gtacctaggacacactgcttaattcagacgcataagctctgtcattgatctcttctaat  
tgccaagtaggatggcccttaaaaataaaacttagattagc

gctactatattgaacaacatagatatgaaacatttccgtcactgcagaaagtctatnng  
acagtgctagctagatataccaatattcaacaataacttttctcagctagttgattca  
agttttcctatttctgaatagttgtacctctcaatctcttagagctattatatgaag  
aaaaatattagtcacatcagtgaaacataaaatccagatttcattcttaacaaaaaga  
gatacaagggtcactgtgggattcacttagaataaattctgattnnnttagggaaaa  
gagtgaatgtcccctaactcctcaagtatnacagnctgcagntgtatattnngtcatt  
atagttaacttccatgtagaagcttctgtgggccatgcgtggtnctcatgcctgaaa  
tcccagcactttgggagaccgagggcaggcaaatcacctgaggtcaggagttgagaccag  
cctggccaacatggtgaaaccccgctctacttaaaagacaaaaattagccaggcatggt  
ggtggcatgtgcctataatcccagctacttgggaggtgagacaggagaattgctgaac  
ccaggaggcgaaaggtgcagtgagctgagatgcaccattgcactccaggctgggtgaca  
gagcgaaactctatctcaaaaaataaaaacataataaa



&gt;IGR3006a

[illegible]

&gt;IGR3007a

agcatntctgcctcaggcaacacggacatcattagtcttaatctcataattttgggtggg  
gaggggaaccattaccaggggacatcaatgatctcaatcccataacttttaggaggggggaag  
ggaatgctttccctttgggtcccagtgactgcagacttaaatactgtacctgtgactttt  
tttttttagatggagcttctgctctgctgccagggtggagtacagtagtgcgatcaagg  
ctcactggaacctccacctctgggttcaagtattctctgctcagcctcccaagtag  
ctgggattacaggtatgtgccacatgaccaggtaattttgtatttttagtagagacg  
gggttccaccatgttggttagattcgtctcgaactcctgacctcaggtgatctgccacc  
ttggcctcccaaagtgtggaattacaggcgtaagccattgcgccagtgacattttca  
atatctagtcccatgaactgaatagaggcatttcaaaaataattagaattttataatctt  
aattttccctcaggaaaaccagtcgttgcataatgttccctctgagttaagaaaatcag  
ttgcatacttatgtgctggatatctgcatttccaggtcacttattactaccatagcagc  
aaagacataatggctcattatggcaatattccgagtcctga

&gt;IGR3008a

aatagaggcatttcaaaataatttagaattttataatcttaatttttctcaggaaaaacc  
cagtcgttgtcataatgttctctgagttaagaaaatcagttgcatacttatgtgctgga  
tatctgcatttccaggtcacttattacttaccatagcagcaaaagacataatggtcattat  
ggcaatattccgagtcctgaacaggctcagaatgaaagctttctgctgttcaggggatt  
tagctcctgtaacaaaataatgcaataaccatgagattaagaggtagtaaggaagtat  
cttlggctatgatgcattggggaaaacttatgcatgcaactcccacttcaccttgactatg  
cttagaaggtctgggtgattggaggcaatagggcatctacatatatgacacttactctgaca  
cttlaaaatgttttagtccattttacagaagcctttlaatatataacaccccccttc  
cctgtctcgttagacaaaagcctgttggctaacatagcctttctctgactgacagtcagag  
aatggatgtcatttaccacactgatctgtgatcctcaggactgcctattgaagggtaggg  
ccatgtagtcccttccttgaggccacgtctgcttttacacttctctgtttatttgtttg  
tttttttagatggagtctagctctgtggcccaggctgga

&gt;IGR3009a

ctgttggttaacatagcccttctgactgacagtcagagaatggatgtcatttaccaca  
ctgatctgtgacctcaggactgcctattgaagggtagggccatgtatgcccttcttga

-300-

ggccacgtctgcttttacacttctctgtttatttgtttgttttttagatggagtcta  
gctctgtggccaggtggagtgcaagtgggtgatctcagctcactgcaacctccacctc  
ccaggttcaagcatttctcctgcctctcagcctcctgagtagctgggattacaggcgagc  
accaccgcattctggctaattttgcattttttagagactgggtttaccatgttggcc  
aggttggctcaaactcctggcctcaagcagctgcccactttggcctccaaagtgtg  
ggattaccagccttgcctttacacttctctgtttagtcatttagcatcagaacaga  
cttcagttactggcgggccttgggcaagtaacgatcctctctgaacttcagcttactgc  
tatataaaatgggtatattaattgggagttgagagattaaatgagatcatatatatag  
cttagcacagtgttgaaccatggtaaatgtccagtaaatataactattattattatta  
ctgtatcattgaggaaaagggttagccatcagcggtcag

>IGR3010a

ttgggcaagtaacgatcctctctgaacttcagcttactgctatataaaatgggtatatta  
attgggagttgagagattaaatgagatcatatatatagcttagcacagtgttgaacc  
atggtaaatgtccagtaaatataactattattattactgtatcattgaggaaaaga  
ggctagccatcagcggtcagtgacaaacttactgctatcaatgggtttatactcttt  
actttatttatatttttctgtttgtttttgagaggagtttcantcttgttgc  
caggctggagtacagtggcgcgatctcagctcactgcaacntccgcctcccagggtcaag  
caattccctgcctcagcctcctgagtagctgggattacaggcacctgccaccacactg  
gctaattttgtatttttagtagagatggggtttcgccatattggccaggctggtctcaa  
actcctgacttcaggtgatccatccacctcagctcccaaagtgtgggattacaggtgt  
gagccactgcgcccgccctattctttgttttaattgtgatattaactgtcatgag  
ttatgaatcaaggtaaacagctgattagaattgaaactaacataaaagtattaggctc  
tgaggtggggaatctctcagggatgaagtaccaggacttt

>IGR3011a

catccacctcagcttcccaaagtgtgggattacaggtgtgagccactgcgccggccta  
ttcttttgccttaatttgcctgatattaacttgcctatgagttatgaatcaagtaaccaa  
gctgattagaattgaaactaacataaaagtattaggctctgaggtggggaatctctcag  
ggatgaagtaccaggactttgtgactttgtggccctacagtgcagcagtaagagact  
gatggaggagttttattatgaagaagtgggagtgccaggcctgccttcacagcaggtcc  
tctccaaatgtgagtgctcttttctaggaatgatcagacacttacacagctcacagcc  
acattgccttttctcttgcactatttggatttagagccccagaacatgccccagca  
gaataacctggtattataacaaagcaaaagccactgcataaactagtgggaaccagacat  
cttcttggagggttccaagggtggtgcacacagacaggacctgtggaccagtcctgtgct  
aatacttgggtggtccacggggcccttctaaatgcaggttgccaggttctcctgggc  
ttgcctacttcgactcttttaacagaggcctgagaatctgtattcttaagcacttggg  
tgattgtgatgagcagccaggattggaacctcagaacaa

>IGR3012a

gtggtgcacacagacaggacctgtggaccagtcctgtgctaatacttgggtggtccacgg  
ggccttcttaaatgcaggttgccaggttctcctgggcttgcctacttcgactcttt  
aaacagaggcctgagaatctgtattcttaagcacttgggtgattgtgatgagcagccag  
gattggaacctcagaacaagaatatgctgtatccagtggtgtccctggcctgggtgg  
agccaccaaagtcttggatcaggtaccagaagcaggttgaaggtcttctctgaag

ccaaggatgcttgagattgctttctaagacaatactctactctatatcttttctatcca  
agttaatgctactgcctgtaacatgaagtgaataacacagtggttaagagcatgtactt  
tggtgcctgggagaactaggtcacaaatcccagtttaacatctgtgtgatcctgggcaag  
ttacttaactcgcctgtgccttagttcttttttgaaaaaaaaaaaaaagcatgagcaat  
gagcagaacacagtgccctggcatttggttaggctcttcaatatcattctaaatagggtgca  
tttctggcacagggctctgcagatcctcctaagaggatcctacgggaggtgagcaggg  
gagatgaccaggcctcaggaaagcgcaagcccccttccc

>IGR3013a

ttagttcttttttgaaaaaaaaaaaaaagcatgagcaatgagcagaacacagtgccctgg  
catttggttaggctcttcaatatcattctaaatagggtgcatttgctggcacagggctctg  
cagatcctcctaagaggatcctacgggaggtgagcaggggagatgaccaggcctcagga  
aagcgcaagcccccttcccttaaggggttgcagttcaggctagatgtgcatcatgg  
caggaagaaagaaggcactgtcaggctgagaatgatggctcacatctgtaacctagcat  
tatgggaggtgaggtaggaggattgcttgagcccaggagtttgagaccagcctgggcaa  
catagtgaaccctgtctctacaaaaaaaaatacaaaatgttagctgggttgggtggcaa  
gtgctgtagtcccagcttgggaggttgaggtgggaggattgcttgagcccagaaggtcg  
aggctcagggtacattgagctgtaattgtaccactgcactctagcctgagcaaaacagtg  
agactcaaaattttttaaagtgtgtgtgtgtatataatataatataatataatataat  
acacatacacacataatataacacattatataatgcgtgtgtgtgtgtgtgtgtgtgt  
gtgtgtatataatataataaaggcactgccagaacat

>IGR3014a

tgtaatgtaccactgcactctagcctgagcaaaacagtgagactcaaaattttttaa  
gtgtgtgtgtgtatataatataatataatataatataacacatacacacataatata  
acacattatataatgcgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtatataatata  
aaaggcactgccagaacatgtgtttaaactgaactatattctatttgcataact  
atatactcatatctatttatgattgctgtcaccacataggtagatccctacaactag  
actctaagtttcacagataggaatcaggccacctagctgataaataccgataaacacccc  
agcacagccctgaagggcagaaagtgttagactcccaatgttgttgttgttgttgt  
tgttgtttatccatttaaattgactgagactgaaatggacttcttatttgaaggga  
aaggattaagggtatgtttgtcctggcagccctctgagagcttgagttcatggccagtct  
aagcctctagccatagccagagatctgcttctggaaaaggctcgaaggccagggactg  
gggaagccgtgggggtgagcagtggcagtgccaccgtcctctacagattctgctttctg  
tactacatgctttggtgcagggcagtgataatgttactga

>IGR3015a

tcctggcagccctctgagagcttgagttcatggccagtctaagcctctagccatagccag  
agtatctgcttctgaaaaggtcctgaaggccagggactggggaagccgtgggggtgagc  
agtggcatgccaccgtcctctacagagttctgctttctgtactacatgctttggtgcag  
ggcatgtataatgttactgaagccaccacagtttttaggtgtcctgagcagactcct  
acctatctctagacaggaatgcctgccccatcctctccactatttaagtgaatcctg  
ctgtcctccctggcttggacctgcctccagccatgggccaccctgctatctttctgtga  
ttgctggcacacagtgtctctacttgatacttaccatttctcccttatgccattctt  
atcttttatctaactccttggcaatcttagttacattctatgttcctttagaatttgg

gctgtgtcttttctatttctcttaggagccagcacagggcatggcacactgcatatcct  
cacgaactgtcaggaggtgtggctgcttccacagaatatcagcttttcttggccacc  
agctttcaagggtgaatcctcaagcctgtgctttcaggccttaagggtctagacatgaca  
cagagtgagactaaagacatgcatagcttctcagcagtc

>IGR3016a

ctctaggagccagcacagggcatggcacactgcatatcctcacgaactgtcaggaggtgt  
ggctgcttccacagaatatcagcttttcttggccaccagctttcaagggtgaatcct  
caagcctgtgctttcaggccttaagggtctagacatgacacagagtgagactaaagacat  
gcatagcttctcagcagctctgtgtaagattcagggtacagtggagaaccagggtgga  
ctagccctgaaacatattttccacttaacttgacatttaaaatcatcagtacatagc  
tgtgtcagtggtttggagcaatgccaatagaaagttgatataaactgcaaaataaagc  
aaactaatattaatgaacgcttctatttgcctaacgagttacatatattattgcattt  
aattcttataaacagcccttaagggtgattttatcttagaatttaacatgattgtgtt  
cctaaggcctagtgaatgcctggatcatagtgggcacttaacaaatattgaattaagtt  
aaattccataaaatcaagaatgcataagctgatctcaagaggaaacatctgcaaatgctta  
cctccacagaatcaaatatcactgctggtacagctatgttgcattttgcagctttt  
ggatgatattctcagcctctctaaatcttctctgggatat

>IGR3017a

ctggtacatagtgggcacttaacaaatattgaattaagttaaattccataaaatcaagaa  
tgcataagctgatctcaagaggaaacatctgcaaatgcttacctccacagaatcaaatatc  
actgctggtacagctatgttgcattttgcagcttttggatgatatctcagcctct  
ctaaatcttctctgggatcatcagccatcggggagattcaggaatgaacctataatttatt  
tttaattttaataattttcacacagcagggtggatactattaaatctgagtttccc  
ccaaatagttttaattttgtaaaattctagtttgccttttaaggaggagccacataaga  
tttctattggagcatagggaataaaataaaaccacctcaagtttcaaacttctgatcaaat  
tataagaccgatcatcagttgtgcttgagaccaggaccagaccataagggtgacattaa  
ctatgggcatgtttgagccagggtcttgagagaagttcatccaaacttataggtagtgtg  
gctcataaaagaacatagctactagactataagttcccctagagaagagactgtcttg  
cagtggtgctccatcaaggagaattgctggtgtccagctggtgatgttcacagtttatt  
gggaaaaggatggccagggcacctgtgttcttgatcgttt

>IGR3018a

gggctctggagaagttcatccaaacttataggtagtgtggctcataaaagaacatagc  
tactagactataagttcccttagagaagagactgtctttgcagtggtccatcctaagga  
gaattgctggtgcccagctggtgatgttcacagtttattgggaaaaggatggccagggc  
acctgtgttcttgatcgtttccttttagtcaaaagagaaagtgagggcactgacacccgcc  
tgtgtggggcccccattggtttcaacagattcccagatcagcgagtgcccaaccagctt  
ttgggagatgagcccaatgttgccttttgaatgtctaaaaagcttattgttttaa  
attacatagcttattcccatttatagctgatgtcacaacacagttgcaataatagggt  
tctattcttttaaaatttttctcaaaatcttttagccattctctgtcagctctca  
tttcttacctattgtcagtacagatggtccctaacttatgatggttcgacttatgatt  
tttctactataggagaaaaatgatatgcattgagtagaaaccttactttgagtgtcata  
catacagccattctgtgttcactttcagtagatatttaataaattacatgaaatattc

aacacttaattataaaaatagggtttgtgtagaaaatttt

>IGR3019a

tacagatgggtccctaacttatgatgggtcgacttatgatttttactataggagaaaaa  
tgatatgcattgagtagaaaccttactttgagtgtcatacacagccattctgtgtt  
cactttcagtagcatttaataaattacatgaaatattcaacacttaattataaaaatag  
gtttgtgtagaaaattttgcccaattgtaggctaataagtggtctgagcatgttta  
aggtaggtcaggctgagctatgatatttgtagggatgcagggcaggcaagctccagagt  
gggttttgcccatgagggttcttggtttgccaggaaagaattcaagggcaactgga  
ggtggaagaaaacagctttattgaagggaatgttacagctccgtgactgtcctgcag  
agcaggggtgccccacaggcagagtagcagctcaggacagtttgcactcatatttat  
aactacttttaattacatgtagatgaaaggctcagtttatgcagaaaattctagggaagg  
gtagtaattttgggtcattgggtcattgccatggaaaggggcaataaagcctgagtgtt  
gtcatggcaacagtaaactgacatggcacacgggtgggcgtgtcttatggaaagcgtctt  
ctgccctggctgtgttttagctggctcctcaatttggtcca

>IGR3020a

agatgaaaggctcagtttatgcagaaatttctagggaagggtagtaattttgggtcatt  
gggtcattgccatggaaaggggcaataaagcctgagtgtgtcatggcaacagtaaactg  
acatggcacacgggtgggcgtgtcttatggaaagcgtcttctgccctggctgtgttttag  
ctggtcctcaatttggtccagtgccaagccctgcctctggagtcgtgtctggcctccta  
cctcagtaggttaggtgattgacctagaatatttcaatttacaatgggcttattggga  
tgtaacccattataagtcaaagagcatctgtactacttagcctagacaacaaattata  
agtagcagacacagagtcctgtgtagttaattggcccaaacccacactaggaattagct  
cagagcaaaacaaatgaccaaccagcaggtccctctccagcttaatagcacatgagttg  
aaaaatgagcctagtttgcatttttcagaatatgcctttagtgggtccctataggaacta  
caataatgttaggtcactgactctcagtaattagaactgtgtgtccgatagaaactct  
gaaatgttctgtatctgtactaagacagcaccactaaccacatgtagctattgagctag  
tgtgattgaagaaatgaaaattcaattttatttactttta

>IGR3021a

ttttcagaatatgcctttagtgggtccctataggaactacaataatgttaggtcactga  
ctctcagtaattagaactgtgtgtccgatagaaactctgaaatgttctgtatctgtac  
taagacagcaccactaaccacatgtagctattgagctagtgtgattgaagaaatgaaaa  
ttcaattttatttacttttaatttttaacttaaatagctgcatgtggctggtggcta  
ctatattagtgcagaattagagatcttactacacagccacgatatacctcatggatgggg  
ccagtatcttttccaaccagattatgcttagaaatataccttttttctacagacc  
actggcctcagattcttaattgttaatcagctagaaattgcatagctttcctcacattgc  
atctatggcctgttccctaccccatccccaccgctatacactccattcacacct  
gtggccacttactgccaaagccttttaaaggaaacttgggacataaaaagtcccccaaac  
accagcagtgccctctatgtaggtttacctccatttctagccactgtactcaggggccac  
tggatatctagttttgaattgctttgatttttttgggtgcacataatctcaaatctag  
ctgatcatttcaaaagtcaatggagtgccaaatgaggttag

>IGR3022a

2825.1025-002

cttttaaaggaaacttgggacataaaaagccccaaaccaccagcagtgcccttatgta  
ggtttacctcccatttctagcccactgtactcagggccactgggtatctctagtttgaat  
tgcttfgatttttttgggtgcacataatctcaaatctagctgatcatttcaaaagtcaa  
tggagtgccaaatgaggtagcacactataatctctctgtagattgaattcagactaaaca  
gcagtgaggtgtgctggagagcttgtctcactagcagggcggcagggtccatgtcag  
ctctaagcatccctccataccccaaccactagactgatgagcatcccttgggaagacc  
acctgcaaggatgggatgttcagaagaaagctattttctttataggaaaatggaagac  
cactggtaaatgttcagggggagcactcagcttgtcagtgctgggtccaggctggcctct  
gtctggggcaagtcctgtccctggtacagtatcccacagccaggagcattcatggacca  
gtcctgggggaatagaagaaaaagctctccttagggcacagtgcagcaggctccctgtggg  
atggaccttctctgctggaaactctggaggctgactctggagggtaatggatcagagct  
gttcgttcctcgtgtgacatatgggtcccaggcaaaagat

>IGR3023a

ctggtacagtatgccacagccaggagcattcatggaccagctcctggggaatagaagaa  
aaagctctccttagggcacagtgcagcgtccctgtgggatggaccttctctgtggaa  
actctggaggctgactctggagggctaataggatcagagctgttcgttcctcgtctgaca  
tatggccccaggcaaaagatcccactcctactaattctctgtacagccatcagaggctt  
atattgttattctctctctctcttctctctgatagaatcaccttaatacagattgatt  
ataactttttttgagacagcatctcattctatctgggctggagtgcagtggcatgac  
atatagcgcactgtaattctgaactcccaggctcaagggaacctcccacctctgcctcct  
aagtagctgggactacaggcgtcaccactgcacccagctaatttttatttttagtaca  
gacagggttttgccatgttgcccaggctggtttgaactgctgggctaagtgatcctcc  
caccttggcctcccaaaagtgtggtgattacaggtgtgaatcaccatacctggctaattat  
aacattttgaaagtactgtgtcttaggtcaaaatgacaactagagccagagaacatagt  
ttatataaacattcagctgaagaggcagaaaagaacctt

>IGR3024a

cccaggctggtttgaactgctgggctaagtgatcctcccaccttggcctcccaagt  
ctgggattacaggtgtgaatcaccatacctggctaattataacattttgaaagtactggt  
ctcttaggtcaaaatgacaactagagccagagaacatagtttataaaaccattcagctg  
aagaggcagaaaagaacctttgaataatcttgcattgtgtcttgagagaaccttagtcac  
taacatctttccaataaattcagctagcaagggtgttgagagaaggacagatgatg  
atgatgataattactctcattcagaaaattgctctgctcttgaagtctgggatgcttc  
cttggaggcacagctatgtagataatggccagccctattcactgctcctcaggccgggt  
ttcccggtcctcagacagggtccagaggaatgttgc aaatcagaataataacataacctt  
taacaaactgtcaactccccctgcacacttcatgccaataattacactagtaaatcaca  
gcactcttacagggtcatgagaatcacaggggcttagagtgcacccacctgacctgcgctat  
ctcgtcagacaggtggcctgcctgtcaacctctatgactgcctaacagctgcagtaagat  
aaaggcctagacagcttccagtcaggaggtatccaaagg

>IGR3025a

ctgcacacttcatgccaataattacactagtaaatcacagcactcttacagggtcatgag  
aatacaggggcttagagtgcagccacctgacctgcgctatctcgtcagacaggtggcctg  
cctgtcaacctctatgactgcctaacagctgcagtaagataaaggcctagacagcttccc

agtcaggaggtatccaaaggacagggaacccatgaggtctagtctaaattgtgagttcca  
aaaaatggtcaagaagcttgtgtatgtgtaagcaggtagaagttatgcagttcgggtga  
aaccagtcagtgctggaagatttgactttgatataatgaaatcaacaaagaagaattaa  
tgagagagaaaagagaatgagagagagacagaaccagaccaccaatggaaggaatctcct  
tttctcttgcttaaatatgaaaaagcaaaggaaacaggaaatctccaaaagagggtatgt  
ctgacaccttggtctatgatttttaatttattcttcacctgaaatccccagatagtc  
tattgggcaagactgaggccagaatctcaaactttgtattcctataactgttggtta  
aaactgagttgggaggttggtgggaggagagaagaggacatttcttaacaatttattaa  
taaaaagtaattttctactcttcgagacatagcagataa

>IGR3026a

ttttaattattcttcacctgaaatccccagatagtcatttgggcaagactgaggcc  
agaatcttcaaaactttgtattcctataactgttggttaaaactgagttgggaggtgt  
gggaggagagaagaggacatttcttaacaatttattaaataaaaagtaattttctact  
cttcgagacatagcagataaataggcacactatcatagtctataaataggcttcctt  
tcatagatgctaactgttatatgatagggaagctgaagaattacattagttggtatagag  
tgagattttctagagagagaaaagtgatgaaagagcagggggcagagttaaaaacaaca  
aatccaacaccaccagctccacaaataacaagtagcaacagacaggagtggctggtatc  
aaggagagattggaatcctgagaatgtgcttttaggacaatggagactcaaactccag  
cacacaggccccaccacaatgaggcaaaaactctccggcttggaagctggcctccgga  
gttccgtggaggtcatgcaagcccaggctaggtcagcatcaggctccaggtgtgtccag  
gtgtgctgacccgcagcagagggcctgtctggggacgagtcacactcaccaccacagcgg  
gacacacagcactcccgccacgtcagcggccagcagcgc

>IGR3027a

gaggcaaaaactctcccgcttggaagctggcctccgcgagttccgtggaggtcatgcaa  
gcccaggctaggtcagcatcaggctccaggtgtgtccaggtgtgctgacccgcagcaga  
gggcctgtctggggacgagtcacactcaccaccacagcgggacacacagcactccggca  
ccgtcagcggccagcagcagcatccgccagtctctgatgaagtaagcaaacagtggcagca  
gcatatagccaactgcaaaaaatgtgcacactcctaatttagagaatataatacgaactg  
acttgccaagaatttctgttctgttcaaaacaaggaggagtattagcatattaactca  
ctttaattttgctttttatcattatgtggcagtttagagttcaaactatcaccactta  
gaaaaggggaaaggcatttgcctcatggcccagagcaggcatggtcagggtagaggaagg  
tgggacgtgatccaagacttggaacttatagaaggttgaatttctatgagattttaatg  
gagccatagattttttattttttaattattattattattattttttag  
acaaagtctccctctgttggccgggctgcagtgagtggtgatctcagctcattgcaa  
cctctgcctcccaagctcaagtgaacttcccacttcagcc

>IGR3028a

ggcaacttatagaaggtgaatttctatgagattttaatggagccatagatttattatt  
tatttttaattaattattattattattatttttgagacaaagtctccctctgttgc  
ccgggctgcagtgagtggtgatctcagctcattgcaacctctgcctcccaagctcaa  
gtgaccttcccacttcagccttccgaacagctggaactacaggcgtgcaccaccagcct  
ggctaattttgtatttttagtagagacagagtttcgccatgttggccaggctggtcttg  
aactcctgacctcaagtgatctacgtgccttggcctcccaaatgttgggattacagtca

tgagccaccgcgctggccaacttattttaaggccattccatgtcataaaaaatcatgc  
ccagccccaagagctaattcccttctgagaatgccacatttccaaaataagagccccaaca  
tgagaagcagagagagcatttcaggagacaagcagtggtcttctgaggggcatgtggg  
gtcaagggtgtgttagcctttccaacagttctgaactgtaaataaacagacattggccca  
tcaggaagcagtgagagttcatcatttccaagacctcagggcacacttacctatgcctg  
agccctgagaaatcagttggagtgagctggctctggaggt

## &gt;IGR3029a

tcaggagacaagcagtggtcttctgaggggcatgtggggtcaagggtgtgttagcctt  
tccaacagttctgaactgtaaataaacagacattggcccatcaggaagcagtgagagtt  
catcatttccaagacctcagggcacacttacctatgcctgagccctgagaaatcagttgg  
agttagctgtgtgttaggttacacagacagggccttctgcagcatgctgtgccagagat  
cagcccaggcagacacagtcacagtcatttggaccaaggaaagaaaagcaggcgctgt  
tctgtgcccttgcaggcagcagccctagacctgtccacacaccttgaactcacagt  
ctttccctgaacagcagaaaggcccatgactgcttgggtgcgggactgcttttgggaaa  
ggacatgcaggcgactattggcctctgctctgctcagtgccacagtgagcagagatggca  
ccagatgggagtcacaagaacaaagctccttctctgtcacggagctctgggccccttcca  
cagagtctgcccttgggttactacacctggggcggagatgtgaccaatggcaatggctct  
gccttttgttgggagctgtcccatgctatagagaagtggccttgaagatacaaaacagat  
aattcaaaggtcattcatgcttgccttttaagagagattt

## &gt;IGR3030a

aaagtccttctctgtcacggagctctgggccccttccacagagtctgcccttgggtca  
ctacacctggggcggagatgtgaccaatggcaatggctctgccttttgttgggagctgc  
ccatgctatagagaagtggccttgaagatacaaaacagataattcaaaggctcattcatgc  
ttgccttttaagagagattttctcagtcattttatgcccctagggcacaggctaaggga  
ttaagagctaattccagagaagcagcaaaattactatgttggctggttctcattttacc  
acctatctgttccatcccacccactcattccccttactgttcataactgagagatct  
gcctcagtggggtcccttccaagaggccattttaaaccctggactgatagaacagccagt  
actttgtgcctctgcatcccatgttggagacaattgcctaaccaccagagcattgct  
cagcctataaaccatttccaaggataggcctgacttctttaggatcatgagtatgat  
ttccaggtcttttctgacctcattaatgaccttctgctatgcactggttctaaacccc  
ttggcgtgattgtgatgtggaaataaatagaagggtcttattcttaagcagagattca  
gtggcagagggttgattttggaaaagagaaaggcgag

## &gt;IGR3031a

aaggataggcctgacttctttaggatcatgagtatgattccaggtctttctgacct  
cattaatgaccttctgctatgcactggttctaaacccttggccgtgattgtgatgtg  
gaaataaataagaagggtgctttattcttaagcagagattcagtggcagagggttgattt  
ggaaaagagaaaggcgagatcaagtgagaatctgtagaattgtaggccagaggag  
ctttctctaccttcatgaccttgttaagaaaagagaagttatactactgggttctgga  
taatctccctctctaagcatgggtctcagaccagaacagttatataacttgcagagtgc  
atgttggggacagagacttttaggtctctcttcttgccttctgtggacagcatggatg  
gtacaaattgaataaattccttttagtctacttctgctctcttttaggcagtcaccc  
ttccttaaacaggatcaccatcttcacagctagcattttttgagtaggtactttgagac



aggtccaggctaagtgtttacatatattatctctttgaccttcacaccagttatataa  
aaactaatattccaggccaggcacggtggcttatgcctgtaatcccagcactaggggaagc  
caaggcaggcagatcacctgaggtcaggagttagacca

>IGR3032a

tcttcacagctagcattttttgagtaggtactttgagacaggtccaggctaagtgtt  
acatatattatctctttgaccttcacaccagttatataaaaactaatattccaggccag  
gcacggtggcttatgcctgtaatcccagcactaggggaagccaaggcaggcagatcacctg  
aggtcaggagttagagaccagcctgaccaatatgatgaaacctgtctctactaagaatac  
aaaaattagccaggcatgggtggcaggcacctgtaatcccacctatcgggaggctgagac  
aggataatcgcctgaaccaggaggcagaggttgagtgagccgagatcatgccactgca  
ctccagactgggcaacaagagcgaaactccatctcaaaaaaactaaaacaaa  
agctaattctcctactttacacataattagctgagacttcagagttaaagccaattg  
cttaaatcatgcacataataagtgtgcaccaggatttaagccttatttgcctatgga  
tactggtctacctccaagaaaaaattactgggggcatgacttggccttataaagcagt  
tcttcaactgagagtcagtagagacatgaggggagatgggtaaggccatctctgctgt  
cattttacagttttctttttcttttttttttt

>IGR3033a

aagtgggtcaccaggatttaagccttatttgcctatggatactgggtctacctccaaga  
aaaaaattactgggggcatgacttggccttataaagcagttctcaactgagagtcagt  
agagacatgaggggagatgggtaaggccatctctgctgtcattttacagttttcttt  
ttttctttttttttttttgagacagacttgcctgtgttgcctaggccagagtgc  
agtgggtcaatctcagcttactgtaacctctcctcctgggttcaagcgatttctcctgcc  
tcagcctcccaagtagctaggactacaggcgcttgcaccatgcccggttaattttgta  
tttttagtagagacgggggtttgccatgttggccaggctgggtctgaactcctgacctca  
gggtgatccaccacctatcccccttcagaagtggatttaccttcccttcttggct  
tgtactggaagccagccagaccctctgagtaatgctaggagagaacctgattacaca  
gatctttatggcctgcagctgccatgagctttccatgtggcagtgaacagatgacaca  
gcagtgactcctgctgtgctgacggggatccctgtcctggccccctatgctctatctgc  
ctcttctgctgcttgccttagggcaaagcctggttgg

>IGR3034a

acccctctgagtaatgctaggagagaacctgattacacagatctttatggcctgcagc  
tgccatgagctttccatgtggcagtgaacagatgacacagcagtgactcctgctgtgct  
gacgggggatccctgtcctggccccctatgctctatctgcctcttctgcctgcttgcct  
ctagggcaaagcctggttggcttggctgggcttctgagtttctcctgggagtga  
aactttgacatctaagccaaaggacatgacctggctaggatgagggccagcatagccct  
aggagtattgccaccacctgtcacacctctgaatctgagcactctccaagaggga  
gtgactcagagagggccaggctgccttccatgtagagcagtagctgccccagggaacctg  
gggcccattccacacagaggcaggacatgcacctcataaatgaccaacataggctctca  
gtagacccagctcaagaaacaagactgtagtgcagctgccaggatataggcgagacc  
aggaacctgggctaggagtgtcctccatctggcacggggagaacctgggttcttgcctg  
ctgagttgctactagagtgtgataagccgtcttccatggagatattattgaaga  
ctgagatcatgtatgcaagtgcctaggagggtgtctggc

## &gt;IGR3035a

caagactgtagtgcagctgccaggatatgagcgagacccaggaacatgggctaggagt  
gtcctccatctggcacggggagaacctgggttccttgatgctgagttgctactagagtga  
ctgtgataagccgtctttcatggagatattattatgaagactgagatcatgtatgcaaag  
tgcctaggaggggtgtctggcatgtggcaggtgctcagtaatagtattctttatcctgat  
caagcagttgaaatgtgctacatgtcaggggagtgatggaaagtacaatgctttgatcc  
aaaaaggcccagtggaagacagaactcctcttcagggcttaacagatgtccctgctca  
gggcttccccctgtctgcaccaatcactccagtcaaaagtaacattcctatctctgtg  
tataccagcaatatgtgccccactcccttgacccatgtcccatgtccacagtgacagc  
tgcattggctgcagaggcacaaccaggcagtgagctccttgtaatagacaggagtaagt  
tcttgctctccctgggtctccccagttctccctcttacggtgcaatgcaataaggta  
tgccagcaaatttctgcatcatgtttacgtatttatatgccagctcatccctggagatt  
ttaggcaactcaaatataatacaataaaataatggta

## &gt;IGR3036a

aaccaggcagtgagctccttgtaatagacaggagtaagttcttgccttccctgggtct  
ccccagttcttccctcttacggtgcaatgcaataaggatgccagcaaatttctgcatc  
atgtttacgtatttatatgccagctcatcccttgagattttgaggcaactcaaatata  
aatacaataaaaataatggtaacattaaagtaagatataaagaaaagtaaaaagtgtgcc  
ttgggtgaaaagatcaaaaatacgcagctgactatttgaaaacagttggcagttctca  
aaagggttaaataatagaatcaccataggaccagcagaggtcctacattatacccaagaga  
attaaaaacatatatccacaaaaatacttattctccaatgttcatagcattattcataac  
agcccaaaagtagaaacaccaggtgttcaatgactgatgaatggatgaccgaaatgtgt  
tgtcttcatccagtggaataactaattcatgttacaacatggatcaacctgaaaacaagt  
ggagtcagtcacaaaggccacataatatgattctgtttatatcaaatgtcggaatag  
ggaaatccattaaaggcagaaaagtaaatagtggtgccaggggcgaggggaagaggggaa  
atgactgctaattcgtatagggtttctttcagggtgatg

## &gt;IGR3037a

ctaattcatgttacaacatggatcaaccttgaaaacaagtggagtcagtcacaaaggcca  
cataatatatgattctgtttatatcaaatgtcggaatagggaatccattaaaggcaga  
aagtaaattagtgggtgccaggggcgaggggaagagggaaatgactgctaattcgtatag  
ggttctttcagggtgatgaggagttagatagtgttgatggctgtacaactttgtgaat  
atgctaaccaccactgaattatacactttaaaagtgtgaatatcatggtatgcaaatctg  
tcattggactgaatgtttgtccctctattattcatacattgatcccctgacctgatagg  
gtataggattagtgttctacaagaagagacaccagagagtgagctctctatggctcact  
ctctctttcttgcittccctctttctgagcacttgcgcagaggaaagaccatgtgaggac  
ttagggagaaggcagccatctgcaacccaatgggagaacctcaccagacaccaacctg  
ctggcactttgatcttgactctaccctccacaactgtggaataaattttggttgtt  
taaaccaccagcctataggattttgttacggcactcctaacaggcgaagacaaaattat  
attcaactgttcaatttaaaaacagtaaaaaatatatat

## &gt;IGR3038a

tgaacccaatgggagaacctcaccagacaccaacctgctggcactttgatcttggac  
ttctacctccacaactgtggaaaataaatttggtgtttaaccaccagcctatagg



ggtttttcaggcttagggaggatcgtcacatggaagatggattctggggactttgaacat  
gaagacaataggctttgacctgtgttcttgagccactggggactaggagggttgaattt  
ctatcttaagtctccaacctccagttccaacaacactggcctgaagctccctgtgcc  
ctctacacaaatgatcttcaagaaaatcttgcctccttccccctgcaggaagggga  
gcagcctcctcccgtggggcctgtgaagagtgtgtacctgtgggacctgtggctc  
cagcatgttctcccacctgtctcctccttctccccctctgcagacactgaggctgagc  
ccatggcacggggctcttcgcaaataattaaggagtaga

>IGR3042a

agaaaatcttgcctccttccccctgcaggaaggggagcagcctcctcccgtgggg  
cctgtgaagagtgtgtacctgtgggacctgtggctccagcatgttctcccacctt  
gtctcctccttctccccctctgcagacactgaggctgagcccatggcacggggctcttcg  
caaataattaaggagtagagtggaaatattccatcctggcaacttgacagaaggtga  
cacacctcaattaagacagtgcagcatctcaaagccaacgagtccttcagactcttaa  
aaagcaatcagagtcacctaaccagattcggacttttgaggcaagaagaatcgtagact  
tctattaaaggagtattattaataatgacactgtggacaatagggacaaattgggatggt  
actgagccacctagaatataattaccctagagatgatgggaactggtgtctactgtcc  
cagggataccccctacctctgttctctcatttgcctcctgctgggctcaagagaacac  
actctctactcctgtggatgacctcatcaactgcctggagctcacctaactcctcc  
caggaaaagctgctgagggccccagggacctcttcatgaccttgtaactgatgagtcttc  
ctcatgcagcctgacaggagatggggctatcagtggtggg

>IGR3043a

gcttctctcatttgcctcctgctgggctcaagagaacacactctctactcctgtggat  
gacctcatcaactgcctggagctcacctaactcctcccaggaaaagctgctgagggc  
cccagggacctcttcatgacctgtaactgatgagtcttctcatgcagcctgacaggag  
atggggctatcagtggtgggaggctgtcctgtgcttagctgataggctctgggggtgggc  
tctaactcagggtgagggcagataggccagtgatggcgggctggcactgaactccccct  
gtctgacatgagcctccccacctgtgtactggccacagtgactaccctaagtctcttcac  
aagcaaccaggaagaagtctcaagcctacacaactcagatcaagacatcctcaggctgc  
cctccccctaaaactgtcctcctgtgcctctcttaagccctgtgtccagagaatgtgt  
ctcagctgttgtgagctgggtcttaattggctcctgtcttcttctccaccacatttcag  
ggctcagcacagaggtggctccctgcgagtgcctgccctgccctgactgtctcaagag  
ctgtggcttacggctccctcccaagacacatatatccaaaggcttggagcacagcccaa  
tggcccaatgatttctcttcttgggcttccagagggtt

>IGR3044a

ttcttaatggctcctgctcttcttctccaccacatttcagggtcagcacagaggtggct  
ccctgcgagtgcctgccctgccccctgactgtctcaagagctgtggctacggctccctcc  
caagacacatatatccaaaggcttggagcacagcccaatggcccaatgatttctctt  
tctgggcttccagagggttagagggaagcaccatgtccagaagccattcctacctta  
gtatgaaggctaccacatagttggagatctggcccatgccacgatgacaaataacacag  
tgaacatctcccagctgatggagaaaatctgcaggaagctgaagccagctgttacagcca  
tggttgcgaagagaacgttctcctgccaacctagagaatgcagtataacacaaaacat  
gagatgtgtaggttgccaaggtgtgttgaagccctgagtcaggcatcaatgcagactta

gagcctcctcccgtggggcctgtgaagagtgtgtacctgtgggacctgtggctc  
cagcatgttctcccacctgtctcctccttctccccctctgcagacactgaggctgagc  
ccatggcacggggctcttcgcaaataattaaggagtaga

gtgtttttcagggtctggcagactttttctgtcacatcctcccatcttcctcctt  
ggtgaggtctcaggcatccatctgctcaggagatatctttgagattctcagcttcctgt  
ggagacaccatgtctcaaaagcatggagcagtgtagcaaggacctgtggaaatatgct  
cttagaaggagccacagatagatgctaccagcacatttc

>IGR3045a

cagactttttctgtcacatcctcccatcttcctccttggtgaggtctcaggcatcca  
tctgctcaggagatatctttgagattctcagcttcctgtggagacaccatgtctcaaaa  
gcatggagcagtgtagcaaggacctgtggaaatatgctcttagaaggagccacagat  
agatgctaccagcacatttctggaaagtgggtacagcacagattgcagatatttcttga  
tcagaacatgaaaattctgtaaatccagaactaagagtcactctgcaagtggttttaa  
ccttggtgcacttggatcacccggagagcttggaaaaatactgatccagcacccca  
cctccaagatttgggatacagtttgggtattaggatttgggaaagtccagatgag  
tagcgtgcaaaaaaattgcaaacactgctctgtgggaagggtgtagcttccagcaatgt  
ctgttggtgacactgaagttgtttaagtattatcttcacattctggtagtaccagtgg  
atagaatggagcacaggtgtgagcagaacagccttcccgccttccaaactcatg  
tctctggctgttggcttgggtgggaggttccccagcattgccatttagtacccccac  
cttctgcactgggtcacccagcacatacaggggcctgtgg

>IGR3046a

gttttaagtattatcttcacattctggtagtgtaccagtggatagaatggagcacaggtgt  
gagcagaacagccttcccgccttccaaactcatgtctctggctgttggcttggg  
ctgggaggttccccagcattgccatttagtacccccaccttctgcactggtcacca  
gcacatacaggggcctgtggaatactgtctcctggtgctgtgatgctgcctcctcaggcc  
tghtaagctctatgagggtcagagccagcatcagctctgtggcccagtgcttggcccagg  
gtccaagccacagcagcagtggtgtgcacagtggggctcactgtctggctgctggctgtt  
tgcagacagatcctgtgccatccaccctaccctgaggtgggtggtagcagggaggggc  
agtgggtgatggcagcgtcatgtttgtcaaggagtctgtggtatgaggacccacttcc  
agtggggcagtgggccctccccaccactggccaaagccctgggagcatgaggctgggag  
aatggaacaaaagtgtgtccaggtgaaggggactgagggcggggtgaataggagacatcg  
gggctctctctatcactgaatcagtggcctgagggctcctccttctctgggtagaata  
ccctgaattcagtcagccccaagataggcagtgattgac

>IGR3047a

cccaccactggccaaagccctgggagcatgaggctgggagaatggaacaaaagtgtgtcc  
aggtgaaggggactgagggcggggtgaataggagacatcggggctcctcctatcactgaa  
tcagtggcctgagggtcctccttctctgggtagaaataccctgaattcagtcagccc  
caagataggcagtgattgacaaggggcacatcccaccttctccctcccatgtgctta  
cctgtctgacagctgcccggacacgaaggagccgaggagcacgcctacgaagaacaggga  
ggtggtgaggggcaccttcagttgtcctcacacaccagattccactgccaaggaagaca  
gcatgaagcgtgagccaacctgaggcagacctcaacccagcccagctctgagggaat  
attagcacggctggcgggcagactctcctcccctgggcccaggatattgccttctgacaaa  
gggcataggccttgcagccctgggttgactggcctgtgccgggactggggagagtaacc  
tggggcaggtcactgccctccctgaaactcaggatcctcttggaaagggaggggtgatgc  
tctactccgctgcattacatagcaagaagccagccaaggccatggctgtgactggtga

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.





agcttacctccccctcctcctgccccctctgatggggcctcccggggttactatgtctgtcc  
catcagcaggggtcccagaccaaggttctcacaacagagcagagtgaagctccatttagctg  
ggccgcatggcctcagctctaatttaagaaacaaaaatccaggtgacaaggaatagg  
gataggaggtcactcttggcatagaaggatgtgccgttcccatggctccctataagtaa  
gggagtaatgggaaagacagtaacagtgtgtggagtgtcactgagtgtccgtgtattatc  
tcaggggatctcaggggtggcatgtgagatgggtactcttctctgttttacaatgag  
gaaatgaaggcacagagcaataaagcaaccagcccaagttctcctagtgaattggtaaaa  
aaaaaaaaaaaaaaaaaaaaaaaaaattgcttaatcattgattcaactgacat  
tcagcacctacctgctccaggccaggctctgtgtaggga

>IGR3055a

catgtgagatgggtactcttatccttgttttacaatgaggaaatgaaggcacagagcaa  
taaagcaaccagcccaagttctcctagtgaattggtaaaaaaaaaaaaaaaaaaaaaa  
aaaaaaaaaaaaaattgcttaatcattgattcaactgacattcagcacctacctgctccag  
gccaggctctgtgtagggcacaagaagacatggctcctgccctcacaaagctcaaggctc  
aagcatactttacaggacagatgtgcacatgtgcatgcatgaggccagcagccctgggtg  
gggtgggcgtgttctgggccacttcaccttgcctttggctagagaggaaagaggcac  
cccctctcaccatctccagcagaaggacagagttctaaaacctgaataatccgtataa  
tcataatttagatgactagtgttgcacagtgttaggcacacagtgggtgcttaacaaat  
tgttgaatgaatattgaacaattaattaggagtcataagaaatcagcctggaaaatgtgg  
ttcttgggctgaggagatcacgcattgcacttggaaaatcacctcagccttgaactaa  
cttccaagtagccaaagtctggcagtttttagttttaccagagctataaaggaccataa  
agataagtgaaccccgctctgacctgcacggaactgagaac

>IGR3056a

attaattaggagtcatagaaaaatcagcctggaaaatgtggttcttgggctgaggagtac  
acgcattgcacttggaaaatcacctcagccttgaactaactctccaagtagccaaagtc  
tggcagtttttagttttaccagagctataaaggaccataaagataagtgaaccccgctg  
acctgcacggaactgagaacgctggaaggtagcctggtgttcagcaaagaacacaggctt  
tctcggggtctgcaactttggactgtgtgatgttgggcaatccattcacctctattagcc  
tgcttcttcaccttcaaaaagatgacaataaacctgctcctaggtttgtgtgtgcatt  
ggatgggaaatatcagtggagcgtctgacacattacaggcctcattaaatggtagtccc  
ttctaccaggtcatactagtagagcattttattgtctgagcaaatcatgacttg  
aacacatggacgaataagcaagcaggttacacttaaatctgactaagagaaagaaattc  
taagaaataaaaattattccagtcctactaaaagctagaaaagctctataaaaggga  
tttgataaatggaattcaatcccagagatgactgtgagtgaataatagcaatggctctt  
ttaagaataaaagattgatttctatagatcctctcatag

>IGR3057a

aagcaggttacacttaaatctgactaagagaaagaaattctaagaaataaaaattattcc  
agtccattactaaaagctagaaaagctctataaaagggtttgataaatggaattcaat  
cccagagatgactgtgagtgaataatagcaatggctctttaagaataaaagattgatt  
tctatagtatcctctcatagtatcctttattctagagaaaagtaagaagtagtagttaa  
taatggactatacatccacccagttctatcttgcacttgattgtgacttaaaagctgg  
gaattccttgacaatatgaaaaacaaaacaaagaaaaacaaaacaaacatggctagt



aattactttttgtaacaactttattgagatatgattatacaccataacatttactctt  
ttaaagtatacaaatcaatcatttttagtatattcacagacttcagcaaccatcagcaat  
gatctgattttagaattttcatcaccccttgaaagaaaaccatacctgttagcagtcact  
cctcattcgtacttctctagccccctggaaaccactaatctactttctgtctctatgaa  
tttgcctattctggacatttcataaaatggaatcatacaatatatagtgtttatgact  
ggcttcttatacttagctccttttctaagtcacatccatgt

>IGR3058a

atcacccctgaaagaaaaccatacctgttagcagtcactcctcattcgtacttctct  
agccccctggaaaccactaatctactttctgtctctatgaatttgcctattctggacatt  
catataaatggaatcatacaatatatagtgtttatgactggcttcttatacttagctcc  
tttctaagtcacatccatgtcattgtgcagtgtatcagcacttcattacttttatgggt  
taataatatgccatgggttgggctgggtgcggtgggtcacacctgtaatcccagcacttt  
gggaggccgagggcgggtgggtcacctgaggtcaggagtcaagaccagcctgggtaacat  
ggtgaaaccctgtctctactaaaaatgcaaaaattagctgggcacggtggcacgtgcctg  
taatccagctacttgggagactgaggcaggagagtgttgagcctggaggtggaggtt  
gcagtgagctgagatcacaccactgcactccagcctgggcaacaaagtgagactccatct  
caacaacaacaacaacaactatatatatatatatatatatatatatatatttc  
acgggttgggctaccacgttttcaatgatctgttcacagttgataagtagtgggttg  
ttccacttttggctactatgaataatgctgctgtgaac

>IGR3059a

cactgcactccagcctgggcaacaaagtgagactccatctcaacaacaacaacaaca  
actatatatatatatatatatatatatatatatttcacgggttgggtctaccacgt  
tttcaatgatctgttcacagttgataagtagtgggttgttccacttttggctacta  
tgaataatgctgctgtgaacattcatgtacaacattttgtgtgtacatgtttcattct  
ttgggttatatacatagtagtgaattgttgggtcacacgtaagtataactcaacctt  
ttgcagaactcctaactctgtttccaaagtgggtacaccattttacaatcccaacagcaa  
tgaatgagggtttcaatttctccacattctaccagtacttgttattgtgtgtctttaat  
tttagtcattgtagtgggtgtaaagaggtatctcattgtggtttgattgcatttctta  
ataactaatgttgaacatcttttgcattgaatctattgatcaatttgagagcactgcc  
tactaacaataagcttctgtccatgaacagaacatgggaagctttccacttgttaag  
gccttctggaatttcttcaatgacattttatagtttttaaagtatacattttgcaaatt  
tttggttaaatttatttctgaagtcctcctttaatatt

>IGR3060a

tttgattgaatctattgatcaatttgagagcactgccataactaacaataagttcttg  
ctcatgaacagaacatgggaagctttccacttgttaaggccttctggaatttcttca  
atgacattttatagtttttaaagtatacattttgcaaattttgggttaaattattctg  
aagtgcctcctttaatatcttctgtaagacatcactgctagaacaattctctcaagtt  
tgtgtattttgaatttcttatctcagtttgaaagacagtttgttgatgcatgatt  
cttggttgacagtttcttttcttcagcacttagaatatgccactccactgccttctg  
tcctttatggtttctaagagaagtcacacgttgatcttattggagtctcttgatgta  
cctagcatatatttgcctgttcaaaatttcccttcgttttgcctcttttttattt  
aagcagttttaccatgatatacagggtgtggatctcttctgtatcattctatttgaggt

ttgttgagcttctgaaaggtgtagattaatgtttccaccaaattgggaagtttcagt  
cattatttcttgagcatttttctgcccttttctctctctctctcctagtaattct  
attatgcataattgctatgttaatgggtgtccccattt

>IGR3061a

atcagggtgtggatctcttgtgatcattctattggagttgttgagcttctgaaaggt  
gtagattaatgtttccaccaaattgggaagtttcagtcattatttcttgagcattt  
ttctgcccttttctctctctctcctagtaattctattatgcataattgctatg  
tttaatgggtgtccccatttctctgagactctatacattttcttattcccttttctc  
tctgttcttggattgcataattccaatcctctatcttcaagttgctgattcttctt  
ttgcctgttcaaatctctgttaaggcccttgagtacttttaattcaattattgtat  
acttttactccagaagttctattcagttgtttgtttgtttaagagacaaggtctcttc  
tgttgcccaggctgggggtgaactcctgggcttaagcaatcctcctacccagcctcctg  
agtaactgggactataggcacatgccatcatgtctggctcagcttttaaaatataaatg  
taattttctctcttattgctattctctatttgatgcaatattgtcatcatacttttaa  
aagcatgacttcttcttcttgaacataattataatggctgccttatgccttaaagt  
ctgttaaatctgacatgtggacccctctcaggcagttact

>IGR3062a

catgccatcatgtctggctcagcttttaaaatataaatgtaattttctctcttattg  
ctattctctatttgatgcaatattgtcatcatacttttaaaagcatgacttcttctt  
ctttgaacataattataatggctgccttatgccttaaaagtctgttaaatctgacatgtg  
gacctctcaggcagttactgttgcccacgtttccccccatgtataggtcatattttc  
tgttctctgcatactcgttaattctgtgtaaaaactggacatttagataatatattg  
tagaaattaggtactgtcacattctccaccccatctcctgatcttcttcttcttct  
ttccgagatgaagtctcactctgttgcccaagctagagtacagtggcatgatctcggt  
cactgcaacctccacctcctgggtccagcaattctcctgcctcggcctcctgagtagct  
gggattacagggacctgccaccatgccagctaattttgtatttttagtagagatgggg  
ttccccacattagccaggtgtgtctcaaaactcccgccctcaggtgatccaccgccttg  
gcctcccaaagtgttaggtacaggtgatgaccaccagcagctctgatcttctatta  
agctgtctgtgtctgtgtgtatcacaccagctgttagcc

>IGR3063a

ccatgccagctaattttgtatttttagtagagatggggtttccccacattagccaggc  
tgggtctaaaactcccgccctcaggtgatccaccgccttggcctcccaaagtgttaggat  
tacaggcatgagccaccacgccagtctgatcttctattaagctgtctgtgtctgtgt  
atcacaccagctgttagcctcactaattgctagccagttgcctcattcattcaataat  
gccctgggggcatatattgtccacagctaatccagttgacgtcaagcctcttgcagt  
ggtagtttttgaggcaaatctataaggtttgtttgactccagaagggtgctcttagct  
gtctcttctgtttgtttgtttgtttgttttctgttaactagctgca  
ttatgggttcatttgtgtctaatggagttaccagaatccttttagttgcttaccacta  
aattctccattgttcttgagagcaatcttaggctgtccttcacacactctattcaaat  
aaagttcgttctgtggggacagctttagaactctgttcttttgattatctctccccgc  
tgggcaaaatatctgagctcctgtttagagaggttaggcagggaaagcggccatttata  
tcagaatgacaccctactttatgagtcagacactgagtg

>IGR3064a

agcaatcttaggctgtcctttcacacactctatttcaaataaagttcgttctgtgggga  
cagctttagaactctgttcttttggattatctctccccgctgggcaaaatatctgagctc  
ctgtttagagaggttaggcagggaaagcggccatttatctcagaatgacacccctactt  
tatgagtcagacactgagtggagtgaggagcttggtgtggaatctctgccgtatgaatga  
gctgggataagggcaatcaaggctctaataattctcaactgtggcacctggagtagagtc  
tctactatatgaataggcgggtgggtggaggatgggaacctatgatcccctggttgcactc  
acgaggattttaccttctgtggttggagctaagagaatacagggatgggtgggggatgg  
gcattggtgtccctcttgggtgggtgctgtgtagcccttcttgaagctgatgggagaga  
gaacagtattttctggccatacccacctagagtgaacttccattttctgtgctggg  
aggaaggggaaggggagggtgaaggagttagactcaaatatcatagacttcactgttc  
ttgccaaggtatagtcgactttctgaataaatatatgcccttaggacaacttcagaga  
ctctaaatgtgtgtgtgtgtgtgtatttaccagtta

>IGR3065a

taccacctagagtgaacttccattttctgtgctgggaggaaggggaaggggagggc  
tgaaggagttagactcaaatatcatagacttcactgttcttccaaggtatagtcgact  
ttctgaataaatatagcccttaggacaacttccagagactctaaatgtgtgtgtgt  
gtgtgtattttaccagttatggctgtttcactgaggagctggtctatggcgtggcgt  
cctcacactgctaacttgaagtctcagaatctttcatgtgctaattgattgtatttc  
tttgcaaaacatctattctccaaaatgggcaaatgattttatccatttttaaatcaggt  
tgtcttttattgctgagttatcagagtatttttatattctagatacaaatcctttatc  
agatatatgattgtcaatattttctcccattttgtgggttatcttttggtgtttaat  
tcttactcatattttcatttacaacaactaagccagaaggctgctaagccttaaaat  
gttctcagtatctttctttcttatattagaaaagctaccacagatggaaaagcctcact  
gatgagttctgtgatcattggaggctaaaccaaagcagaagaaccagtgagtgtagtg  
gaagatagggatgggagtgagggggctgtgggaaggagaa

>IGR3066a

ttacaacaactaagccagaaggctgctaagccttaaaatgttctcagtatctttcttc  
tttatattagaaaagctaccacagatggaaaagcctcactgatgagtctgtgatcattg  
gaggctaaaccaaagcagaagaaccagtgagtgtagtgagggaagatagggatgggagtg  
aggggctgtgggaaggagaaggggtcactcagggaacctggctgtgcccttgcacctgac  
aatggatccaccacagctctaccagtctgtattaggggaacatgagcaaatggcatcgtg  
tctgtgccagtcaccaagcactgaggggaagctctggaagttgccgcctgaacctgccct  
ccagtcttgcaaatgctgagcaggagccaccagccttgactgtctgtgcttctgttag  
agcatgtgggtcattccagcctttcccagaacgtccattctctccacaccttcttcatt  
ccaaatggggatccttgctttcttttgactccagagacatgcataaaaccacaacaca  
gcttagaaaacaaggcacacctgtattagtcttacacctaattgaatgcagcctgcc  
taagggaggaattacagtccttctagagcccaaggctacgtcagctccccctgaccagt  
cctgtcaaaagccttgttttgcataaatgccaccttgac

>IGR3067a

ttcttttgactccagagacatgcataaaaccacaacacagctttagaaaacaaggcaca  
cctgtattagtcttacacctaattgaatgcagcctgccataaggaggaattacagtcc

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ttctagaggcccaaggtacctgcagctccccctgaccagtcctgtcaaagccttgtttt  
gtcaaaatgccaccttggactctgtctgagagtctgtgtcccaccaagagggatggaca  
aagtctgtttatccagaaacttggcaggaggtgcaggtgaagcagcctctgaacaaaagc  
atattctgagatcctggtggctgtgtgcagaggaacacagcagagaggcaaacagtttg  
ggtgaggcagctgataaacaacagggaagcacattcaggccagagcaaggggaagcccc  
tgagtctcctctatgtgctcttggcaagatctactttctgaagcattgactggaatag  
aagtctcgccgggctggctggagccagaggccccacaccttatcccccttggaaatctgc  
cagagggcaggtctgagtatggacttggatgatcaacttggtaatatcaggtatctt  
gacagctccacacccgtgagcaatgtcccagggcagcctgcaggcctgatagaaactcc  
acaaacctgcctatcacggaagggtttccccctttgtcgg

>IGR3068a

gagccagaggccccacaccttatcccccttggaaatctgccagagggcaggtctgagtat  
ggacttggatgatcaacttggtaatatcaggtatcttgacagctccacacccgtga  
gcaatgtcccagggcagcctgcaggcctgatagaaactccacaaacctgcctatcacgga  
aggtttccccctttgtcggggcctaccagaccccaggggaggtgcatccttgagagcc  
gctatgtgaagtcacatagtgccagccgcatgtgagggttagtctgtttcattatcc  
cttgcttgcctcagtgccctccagaagttccccgttagcagggggaagaggccttat  
ccttcgccacataacctggctcgcctctgggttatgggtggggaatcagtaagtctact  
gctgttcaggccctgacccagttccaggaagcacaaggctagtgccaccagaggtcc  
aggcccccttgcctggaggctccatcaactccactaccagtgggctaccagcagctccacta  
gggttcctagaggaggcagcccagctgcagaagaggacaggaggtactacggtgtggcag  
cagccctgtcttagatcactggtggcctgcaaagaaggctggtccttaacacaaaggt  
ccccagggcctctggagcacaagacctggcagaagtggt

>IGR3069a

catcaactccactaccagtgggctaccagcagctccactagggttcctagaggaggcagc  
ccagctgcagaagaggacaggaggtactacggtgtggcagcagccctgtcttagatcact  
ggtggcctgcaaagaaggctggtccttaacacacaagggtccccagggcctctggagca  
caagacctggcagaagtggatccagcttagagggtactgcctcagtttccagcccat  
ggactgatgggaaggtaagaccctaagatgctccatgggagaagaggacatgcttgag  
gcaaaggccagcccatgcttagccccctggccacgagccaggattgcctctgctgcttgc  
ctgtggccctgcagatgaacttaggccctctccagagcagagcattgttgccttctg  
ctccttagcctcagggcaggaggtgccgggttctcacacgcagggcctcttctc  
tgaggcttggccctgagggtatataagggccatgcccagagactgagatctga  
cccctgcagtaggtctcagggataggaccccagcatcagacactctgggtgcttgggg  
cacttcttcccaacagaagctcagtcaccaaccaggtcccaccagtcctgcttgcg  
ttctgtcactgctgcctgatggaaaacttagcaacga

>IGR3070a

ctatatatgaagggccatgcccagtgagactgagatctgaccctgcagtaggtctcagg  
gatgaggaccccagcatcagacactctgggtgcttggggcacttcttcccaacagaa  
gcttcagtcaccaaccaggtcccaccagtcctgcttgcgttctgtcaactgctgcct  
gatggaaaacttagcaacgagctgtgactggcactcctccgcaggggtaaacacagact  
cctctagccctgactgcagagacagataaaggcccttacccttgatatctacattctta

tccttaaagtgaaaaataacttggtttgagctagaataactggagcaacaaaataaagat  
ggatagcattagtttataactgatgaaataaaataagtatgtatgaacctgtactgatat  
aagttaacaattgcatacattaataatagatgtggaggggaagctcttctcagaag  
aattccaattaataaatgttgaaggaatcagaaaaatgcaaaatcatcactaggcaaaactg  
cagtaataattgttcagtcaagacctagtgtatgaatgctaaaatcagtgaataaaaatt  
tgaggagacacaggattttgtataatctcgaagaacctcccttaagatatatttagtga  
caggagaaaaatagttacctttacagcagagaaattccac

>IGR3071a

gaaggaatcagaaaatgcaaaatcatcactaggcaaaactgcagtaataattgttcagtc  
aagacctagtgtaatgctaaaatcagtgaataaaaatttgaggagacacaggattttg  
tataatctcgaagaacctcccttaagatatatttagtgacagaggaaaaatagttacct  
ttacagcagagaaattccacagacaccaacttgacaaatgatcaaggttaacatcaccag  
taataagacacatcagcatcatgtacctactggtatgatgccagagaatgcatacttc  
taagggtatcattaccaaaaagtgcataacgcaatctaattgtgagaaaaatcatgccaac  
ccaaactgaggagcattcatcaaaatactcataaaaatgtcaagatcatgaaagataagg  
aaagactaaggaacaatcacagattggagactgagacatgacaactaaatacaacatggg  
atthtggatgggactcactacgatagaaaaagggcagtagtagaaaaactgggaaatccaa  
acaaagtctgtatgttcagttattactattgtaaccaatgttaatttctggtttggataa  
atgcataacgcgtatttaattgttaacatcagagaaagctagatgaagggtatatgtga  
aatctctgtactattttcaaacttctctctaaatcaaaag

>IGR3072a

atagaaaaagggcagtagtagaaaaactggtgaaatccaacaaagtctgtagttcagtt  
attactattgtaaccaatgttaatttctggtttggataaatgcataacgcgtatttaa  
ttgtaacatcagagaaagctagatgaagggtatatgtgaaatctctgtactattttcaa  
acttctcttaaatcaaaagtattttcaaaataaagttaaaaaataatcgccaggcgcgg  
tggtcacgcctgtaatcccaacactttgggaggccgaggcaggtggatcaccttaggtc  
aggagttcgagaccagcctggccaacatggtgaaacctgtctactaaaaatacaaaa  
aacaacaacaacaacaacaaaaaactagccgggcatggtagcaggccctgtaatccca  
gctactcgggaggtgagggcaggagaatcgttgaaccaaggaggcagaggttcagtgga  
gccgagatggcaccattgcactcctccacctgggcaacaagaacgaagaagaaactcc  
atctcaaaaaataaaataaaataaaataaaataaaacgaaaaataatttgactc  
ttagtaactgcacaggttgaaaaacttgacctcacaatcaacctgaagaaggaaact  
acctatacatgtacacacacagacgaatgcactcacg

>IGR3073a

ctctccacctgggcaacaagaacgaagaagaaactccatctcaaaaaataaaataa  
aataaaataaaataaaataaaacgaaaaataatttgactcttagtaactgcacaggtga  
aaaacttgacctcacaatcaacctgaagaaggaaactacctatacatgtacaca  
cacagacgaatgcactcacgcaaccccaactcagacacctattgctacctcctggcat  
actatgaaaggcattttacagcacagcatgccatccttggttctggctaacctgtcc  
tctgtgaagaggtgttggggggcagttcaggcagactgtctgtcccaagatatgcc  
cattgggagatcctggcacggcagataaggcaaaagacacaatctgaggacagtccact  
acctgtgtgtgccaactgggatgcagagaaccttctcaggggccctgggcttggccctg

tacactggcactggccaagtcagtatgggttggacttgtgtctattctctgaggcttg  
gaactgccactgtggggagaggggctcagcctccagcaagtcccatcactattacacag  
gccacaacctggactttagaacagctccaccatgccactgtccccagccagtggagaa  
ggcaagaaggtgctgagcttctgcctttaccactcctca

## &gt;IGR3074a

cagtatgggtttggacttggtgtcttattctctgaggcttggaaactgccactgtgggggaga  
ggggctcagcctccagcaagtcccatcacctattacacaggccacaacctggacttaga  
acagctcccaccatgcccatgtccccagccagtggagaaggcaagaaggtgctgagct  
tctgcctttaccactcctcaccaccacttaggaagccatttgctggtgccacactcttt  
gctggtgccacactctgtgctggccaccaccggatggggcatggggcattatctcactga  
gtcctcccaacaactcagataaggtggcttctcttattatccccatttggaaaactgaga  
taaagtacacataatatacagttaccatcttagccatttttaaggtgtacagttcagaag  
cgttcacactggtgtgcaatcaatctccaacactactttcatcttacaaaactgaaactc  
tatacccatgaaacaacgactccctactccttcttcttccagtccttgccaaccaccat  
ttactttctgcttctgtgagtgtagtactcctgtagtgaatcagaaaataattgtct  
tgtgactggcttatttctaagcgtagtctcctcaaggttatccacggtgtagcatgt  
ccttctttttaaagctgaataatctgccattgtacgcat

## &gt;IGR3075a

tccctactcctctcttctccagtccttggcaaccaccatttacttctgcttctgtgag  
tgtgactactcctgtagtgaatcagaaaataattgtcttgtgactggcttatttact  
aagcgtagtctcctaagggttatccacgttgtgacatgtccttcttttaaagctgaa  
taatcgtcattgtacgcataaccacattatgtttatccatttgtctgtggaaggacac  
ttgggttgctttcaccttttgactattgtgaataatgtaccatagacatgggtgacaaa  
tatctctttgaaacctgtttcaattattttagacatataccagaattagtagtctgg  
atcatatgggtgattctatttttaatttttttagggaccaccacatttttccatagtgg  
ctgcaccattttacacitcccactaggaatgaacaagggtttcaatttctctacatctca  
ctaacacttgtattttctgtgtttaaaaacaacaacacittttttagaggtgggggtc  
ttgcctgtcaccaggctggagtgcgagagatatggctatagctcactgcaacctcaaac  
tcttgggtcctaagtgatcctcctgccccagcctcctgagaagctggaactacagtcacat  
gccctcatgcctggcctaattttttattttttttaga

## &gt;IGR3076a

tgtttaaaacaacaacacacttttttagaggtggggcttgcctgtcaccaggtg  
gagtgcagagatatggtcatagctcactgcaacctcaaactcttgggctcaagtgatcct  
cctgccccagcctctgagaagctggaactacagtcacatgccctcatgcctggctaatt  
ttttattttttttttagagatggggcttactatgttgcccagtgctgtcttgaactc  
ctgccccctagcaatcctcctgcctcggcctccaaagtggatttctgggtgtttttt  
ttctttttagtaactatttttaagggtacaaaagtggtacctccttatgatttcattt  
gcatttcctagtgttagtgatgttgagcctcttttcacgctgtgaccccaatttat  
agacaaggaaactgaggtttcatcagtgatgtaacctgcctggagtcagccaggtggtt  
ggcagtgagggtcaaaactggccctctactgagctctgactccagaactctgtgtgctgccg  
ccccctctgggggagagccatccatccatcctgcttaccctggtaactgttctcctccctc  
ctctcccaaccaccagagcccagtttttgtgtgtgtgtgtgtgtgtgtgtgtgtgtgt

agacacagtctggctctgtcaccaggctggagtgtgtg

>IGR3077a

ccctctactgagctctgactccagaactctgtgtgtctgccgcccctctggggggagagccat  
ccatccatctctgttaccttggtacttgtctccttccctcctcctccaaccaccagagc  
ccagtttttgttgttgttgttgttgttgttgttggagacagctctggctctgtc  
accaggtctggagtgctgtggtgtgatctcagctcactgcaacctccgcctcccaggttg  
aagtgattctcctgccttagcctcccagtagctgggactacaggggtgcaccaccactc  
ccagctaattttgtatttttagtagagacggggtttaccatgttggccaggtctggtct  
caaactcctgacctcaagtaatctgcccgcctcagcctctcaaagtactgggattacagg  
cgtgagccactgtgccagcccctagtgtctttattttacttccaccactcaaaaagg  
aagccaggaaggggaaaagctgccaaaaaaagcaaatcctggatgtgtgtgaatgtgt  
gatgatgtacatccttagaggtccctgtgaacagcgtacaacatgagtagctatggactt  
ggaggccagcagctactaccctcacgccctacagtgaacaaaaccagcgagcaatgga  
aaagcagacaggtcagcccagctgccagggaaggctgcc

&gt;IGR3078a

gccccaaaaagcaaatcctggtgcatgtgtgtgaatgtgtgatgtacatccttagag  
gtccctgtgaacagcgtacaacatgagtagctatggacttggaggccagcagctactcac  
ccctcacgccttacagtgaacaaaaccagcgagcaatggaaaaagcagacaggtcagccca  
gctgccagggaaggctgccactcatgggtccagcctccataacaggcactgataaacatt  
ccaggaatcgacgcgggatgagctggccccagctcagctgctcccaggccatgctgtg  
ggcaggggagtgggcaagcactagagccctgctaggggaagcaaatccagagaagcatggc  
caccttagggcccagggtaggtatggtgccaatgctgggggatccaaaggcagtccttg  
gctgagcccacttcccacaggtgccacagattcgacaaccaccagcctggctggccacc  
attctcttgacagaggagagtttcaaaacttcctcactggtcttctgtttatcatagcag  
ctagagtgagctctttccaaaagcacgaacctggccttagaatgcttactattttctcac  
tgtctccgaataaaagtcagctcctcagtatacatagaaggccactatgaactagccctt  
gtggccatttctagtctcatttgcatactgttcacct

&gt;IGR3079a

ttcaaaacttcctcactggtctctctgtttatcatagcagctagagtgaagctctttcaa  
aagcacgaacctggccttagaatgcttactattttctactgtctccgaataaagtcag  
ctcctcagtatacatagaaggccactatgaactagcccttgtggccattttctagtctcat  
ttgtcatatctgtcatcccttgagttccagccactccgatatatgagaattccattacct  
gaatttcccatactcttgccctagacaggctctgtcacattttcagaatcagctaaaaac  
atatcaccctctcttgagtagtttctctccacctattgtccacagagagggtgatttatt  
tatcccagggtcacatagcaagcaaggcaggacttgaatttgggtccagaacctattgc  
taaccaggggtaatgttagccttctcagtaacacagccagtgtgccccatgggcatctga  
gggtaggtccacacaccagatgtccacaccttagtgctcagcacaaggccagacacaat  
gtctgatgaccgctataccgtgctgagggaaagggataagggactagcagaggccactca  
ggtttttcttgggaggagcatgaggcagaggagggactagcagcaggggaaatcctactg  
cctgaccaatagcaggcaacagctccatgaggatgctctc

&gt;IGR3080a

-322-

atgtccacacctagtgctcagcacaaggccagacacaatgtctgatgaccgctataccg  
tgctgagggaaagggataagggactagcagaggccactcagggttttcttgggaggagca  
tgaggcagaggaggactagcagcagggaaatcctacctgcctgaccaatagcaggcaac  
agctccatgaggatgctctcctcagaagaaaggtgtatcctgacctagggtccttaccaga  
tgtgaagcagcaaaagcgggagaagtgtgtgtgcatcctcattcctggaactagaaaac  
ctgccactaaccacgcagggtgctgaggggtacagcccctgcctgccaactcacctgt  
gctcagagagggtcctgagggccagggttccagctgggggttcgccttctgtgcttct  
tgcaccaatgagcctcaggaggccatctgctgtcttagagaaactggggcctcaggaaa  
ggaccccaaacctcacaagtatatggtacggcagtacacctcctgatgcctccagaagtc  
tgtggccagggaacagacaagatttggccccgccctgccagtaacaaggctccctcacac  
ccctcctcccatgcctggcaggaagtgactcaggcagtgctgtggtagcctgggctg  
cgcttcccccaacgaacatctagggtcttaggaaactc

&gt;IGR3081a

atatggtacggcagtacacctcctgatgcctccagaagtctgtggccagggaacagacaa  
gatttggccccgccctgccagtaacaaggtccctcacacctcctccatgcctggca  
ggagggtgactcaggcagtgctgtgggtagcctgggctgcgttcccccaacgaacat  
ctagggttcttaggaaactcatttgtgtgaaaatcggaatgaaaagacagttggtgac  
aaactcctttctccatcacctccttattggacagaaacgaccagggaatgcgcctcgcgt  
gagtcctattcttcttgggggtgcacaccgcgtgctggaagtatgaacagcagggttgag  
ggggaggggagcgtgacccgggactgcgcaggaggtctcaaggggggctgacgcagag  
ggagggtcaggcactcccggtcaacggctcgcctggcaccacctcggtcacgacgg  
tggacaggtagacgtcctggctgaatcccagccatccaggcagctcctgctccagct  
gccccagggtccacgtcgcgccccgggtccagcccagcgcggagaagtggcgatgggtg  
cgagccggtagcggctgcagctgtggggcacctcgcggccgtcccgcagccgcagcggga  
cactgttgttgcgccaggcgtgctcagggtcgcggcgtc

&gt;IGR3082a

ctgaactcccagccatccaggcagctctcctgctccagctgccccagggtccacgtcgcgc  
cccggtccagcccagcgcggagaaagtggcgatggtggcgagccggtagcggctgcag  
ctgtggggcacctcgcggcgtcccgcagccgcagcgggacactgttgttgcgccaggcg  
ctgctcagggttcgcggcgtccggcactcgcagcgggtgctccggggtccccgccaggaaac  
acgactgacataaccattgaagccattggggatgatgctggcgtgagcaggaagaagatg  
aggcgttggaaggccccactcgcaggaaggcgtacacctgctgtagtcccgcagtg  
cttccactgccgtccgaaactgcaactacgggtgatgacagcgttctcaggacagtg  
tctttagctggggcgtccccaaagatgttagaacgttccgggggacaggcaggctgt  
tagaaattggggcgcgaagccggggaccgttctgggaaacaggctgaaggcgttggagc  
gttccgggagctcgcgtgagcttgatgccactgtacacttgggaccacacccccatcc  
ccggccgggcgcggggaaggggagggcggcccagcccgggaggctgggctcccggctgtc  
tccgacctgtgttcgcgcgccccgcccccaggacc

&gt;IGR3083a

cggggaccgttctgggaaacaggctgaaggcgttggagcgttccgggagctcgcgctg  
agcttgatgccactgtacacttgggaccacacccccatccccggccgggcgcggggaagg  
ggaggcgggcccagcccgggaggtgggctcccggctgtctccgacctgtgttcgcgcg



ccccgcccccaaggacctgacgggggcttccaggctgggctcagccattccggccgc  
gtgccggggaagaagctcgttctcggttgtccccagccacccccgagcgctattcccag  
acctggggccccacgtgggagggcgggcgcaaggaggagccgagggcagagagcgagttc  
tcggaggggtcggccctgatctgctcggggcgctggccccggggccagaccccagcag  
ggttccctccgcggtctctccaatctggaggctgagcttaggctgccacgcgtggggcg  
cggaggggagtgagtcagtgagtcgggtccccgggaaacttctggggggcgagagcgacag  
gagcgcgccctctctgtggcgccctcgcgcaggcggtggcacacgccgacagggagctc  
atttcccaacagtcctagcagagctgaattcggtcaccctggcgggcgccggacagcgt  
cctcaggacagccaggacccctcatcttcacagggaaaac

>IGR3084a

gtcggttccccgggaaacttctggggggcgagagcgacaggagcgccctctctgtgg  
cgctcgcgcagggcggtggcacacgccgacaggagctcatttcccaacagtcctagca  
gagctgaattcggtcaccctggcgggcgccggacagcgtcctcaggacagccaggaccc  
tcattctgcacagggaaaacaggccacagcctggaagggatgagcaaggtcacactacg  
tcagagatggggccggatcggaggaggggcgggggcgaggagacaaccgagtggccggga  
ggcgagtctctccccgcacgccggcgtaatggctgagcccagcctggaagccccgcc  
gggtccatggggcgggcgggcgccaggacatggagcctgcgcattgcgggagcacagtcac  
ggaggcactgtcgtcacgctgggttctgatttgagccccttctctctcacgccccca  
gggccccttatcgcggcaggtctgacagctttctccactggaaggctttctgttagca  
gaaggccctgccccagtcaggaacagagggaggaggaggagagagaagtaggagatccg  
atttggcgctcagaccggcagggtaacaaagcagggaccacagcctcccttttttg  
ctcagtgcccagacctaaggcccttctgctgtgtgtgag

>IGR3085a

ctgtcagagctttctccgactggaaggctttctgttagcagaagggcctgccccagtc  
aggaacagaggaggaggaggagagagaagtaggagatccgatttggcgctcagaccggc  
agggttaacaaagcagggaccacagcctcccttttttggctcagtgcccagacctaagg  
cccttctgctgtgtgtgagctagccgggctggagcctgagccctgggggtcacagg  
cagataaaattgacagggtgaagagctcaccttttgagatttgcacagtggtgttg  
tttccccaggctccgattaaggcgaggagacatttgcctcttttgtgtagctcc  
agtctgacccctctcttaggaggacttccaccccttgaacctcagtttctacctg  
taataagactatacctctgatgtgctaggacagctctgattatgcctattaatccagt  
gaaattattaatagagcctcccttactttcacaagtatccttctcgaatgatata  
tggtcattatcttacttagcttgggttcatctccctactccacccatataatagagca  
aagttggagacaagaacgtatataaggtcgtttattctgagtaatgatacataaacag  
aagtgagggactaggaggagagtgtaacagagaggagggt

>IGR3086a

cccttactttcacaagtatccttctcgaatgatataatttggtcattatcttacttagc  
ttgggttctatctccctactccacccatataatagagcaagttggagacaagaacgta  
tataaggtcgtttattctgagtaatgatacataaacagaagtgagggactaggaggga  
gagtgaaacagagaggagggtaaagccaacatagactgtgaaattgagatggttattggcg  
atgaccaagatcagtaacagtggtgtgtggagccctagtggagcctaagaataaatggaa  
aattagcaactactgagcctgtctttattgaaaatttgatattgcgttcacatgggtat

ttgcattaatttctattttaaaaaatattgcattaaaatataattaattcttggttactga  
atttcttggtgcctccttaaattgcaccagagacaagtgccttgctcttttctcacc  
tcagccttgctcaatccccattgctgtgggttactgaggtttaatccactgggggctt  
ctaaagagccatatagaatgaggaggattttgttcctagtctgtctccattggtcaac  
tgcttgcacttcagattagcacataagtgagggtgaacaggtaccactcgactattg  
ccattgctcacaagtgtatgtaaactctatctggaattg

>IGR3087a

attgctgtgggttactgaggtttaatccactgggggcttctaaagagccatatagaatg  
aggaggtattgttccctagtctgtctccattggtaactgcttgcaacttcagattag  
cacataagtgagggtgaacaggtaccactcgactattgccattgctcacaagtgtatg  
taaactctatctggaattgtttgtcctccatacaaaaatgaatgaacaagtatactgct  
tacagcttagccactgggggaatttccctcaaagtgttagggctaccccctaaatg  
gagctatgttacaggaacaatctcttttctttttctttttaactagtatcaatgtc  
taaagctaataccatctgtgagtaagggttatttccctccatcagttggttacagagaa  
ctacctactaaggctgtaggctgagctaagacagaagggttggtatagccgatactga  
ggtaggtgtcataggagctgagccacctttgttgacttacatgcacctattgacctg  
cttagtctgatcctgaatttaccattcctgttctattattatatgatggattgctgata  
agtctgcttt  
gctggagtgagtgccacaaatcacagctcactgcagcctc

>IGR3088a

gagccacctttgttgacttacatgcacctattgacctgcttagtctgatcctgaatt  
taccattcctgttctattattatatgatggattgctgataagtctgcttttttttttt  
tt  
tt  
tcacagctcactgcagcctcaacctccctagggtcaagcaatccttctacttcagcctcc  
caggttgctgggactacaggaacacctccacaccagctaatttttttttttttttttt  
tttagagatgggggtttgccatgttgccctcctggggtcaagtaattctgcccctagct  
tctcccaaaagtgccgggattacaggtgtgagccacctgcctggcttaaacctgcctaa  
tcttacgacttggtagactctgacaataacctggcttacaatgggtatctctggttcata  
gaccttgatgtccattgctaggctcttggttttttttttttttttttttttttttttt  
aaaagtcgaatatctctctgctgcatggccttgctccagaactttagagatctgtgctga  
aactcttt  
tctagccccattgtatctgctggataatatgaaccaaag

>IGR3089a

taggctcttggttt  
ctgcatggccttgctccagaactttagagatctgtgctgaaactcttttttttttttttt  
tcagagactctgccctgtagccttattcatcatgtatgcctctagccccattgtatctgc  
tggataatatgaaccaaaggttagagaagctgtactctagtggacacactgtacagct  
ctctcctgctctgggtttcaccgaaactgaaagccttcaggggcacgaaatagatgggt  
cagaggaatactccaccaagcactatgccttagtgttgaggatacagagctcaataact  
tgtctttactttacaggggataacctggcatgactactgatccctgataactttacccat  
ttgtttcaaaataatatgggatagaagaagtgggtggggatagatgaaataatatggg  
ctgtgaatagtggtcaagggttcgttttactagtgttctacttttacatccatttaa

cttattctagaacaaaaagtaagaaaaagtgaacaatatgaatgtcctgaatttca  
tattttatctgctatcctttggcatacatgtgtctttactaggacatctagagttctg  
cttctcttgcttactaggtcaaattagcattaggtcatc

## &gt;IGR3090a

gattcgttttactagtttgtctacttttacatccatttaacttattctagaacaaaaag  
taagaaaaagtgaacaatatgaatgtcctgaattctcatattttatctgctatcctt  
tggcatacatgtgtctttactaggacatctagagttcttgcttctcttgcttactaggt  
caaattagcattaggtcatcaatacagtgactaccatgatgttcaatggaatttgaga  
caatcaaagtcgctagatactgtgtgtgcagagaggagaactaacatagcccagaggca  
agagagtgaatatgtactgctatttctacataaaagcaaacagttttcatcctcct  
gactgaaggatattgagaagaaaatattgatgttgaaattaatctctgcaataccacc  
aggatgtggttttactctcatttaataaatcagtaagaaaggtgagggttaagtgtcagg  
ggctttcatttggcccttctacctaataatggctcttaataaaataggagtaaatgttag  
tgtactgccagttgctacaacatctgtcctagtatttacttagggataaggaaattagt  
acagtgtggatcttcagacttctggatctgttgcaagagtactccatttacctggctt  
catgagcctctgtcacggggggaccatgatagtgttccc

## &gt;IGR3091a

tacctaattggctcttaataaaatagggagtaaatgttagtgactgccagttgctacaa  
catctgtcctagtatttacttagggataaggaaattagtagcagtggtatcttcagact  
tctggatctgttgcaagagtactccattacctggctttcatgagcctctgtcacgggg  
ggaccatgatagtgtttccccccagcactgatgccagctcatactctgtaccaatagcc  
tttgaaagctggttctttttctccccctgaccagagtactatgataaatggccacag  
atctctcatgtggaagattggggaaataattatctgtatacctttggcagcattggag  
ggctctctataaaaaggcttggcctttccttaaatcaataggctctgagcctgagaact  
ggcctagatcaaggaaatttataggaaataactatttccattatggcagctgtcatctg  
ccttctgctcatgagcccttgattttggggattgctgtgttacagtcaagtaatacaca  
gtcatctgccaatttagttaactctagggacactatggctatttagccattgccatagat  
agaccctatgggtcaaagcacttagctgccactttggtttgtgtaattattattatta  
ttatttttagacggagtctactctgttcccaggttga

## &gt;IGR3092a

gattttggggattgctgtgttacagtcaagtaatacacagtcacttgcgaatttagtta  
actctaggacactatggtctatttagccattgccatagatagaccctatgggtcaaagca  
cttagctgccactttggtttgtgtaattattattattatttttagacggagtctc  
actctgttggccagggttgagtgagtggtgcgactcagctcactgcaagctccgcctc  
ccaggttcacgccattctcctgcctcagcctctgagtagctgggactacaggcacctgc  
gaccatgtccggctaattttttagtatttttagtagagatggggttcaccgtgttagcca  
ggatggtctcagatctctgacctgtgatccaaccgccttggcctccaaaagtgtggga  
ttacaggcgtgagccaccgcgcctggccattttgtgataattttatctaccctgcct  
ctgttgattgtaccatctggtctctgcaattccagggtcctaccatcccactgacac  
taagaattcctcacctttacatgttgtgtgcctcggtgaaaagagtggcctctggactt  
cccatgggaatgtagcttcttagtaggttctctgatcttgcataaataactacaatctaac  
atgctaataccctctgagacttctgactccttcagtattct

>IGR3093a

ggctctgcaattccagggtcctaccatccccactgacactaagaattcctcacctttac  
atgttggttgctcgggtgaaaagagtggcctctggacttccatgggaatgtagcttc  
tagtaggttctctgatcttgcataaactacaatctaactgctaattcctctgagact  
tctgactccttcagatattctgccaaggagtttctggcatcttacttcattccgaagg  
tcgtaattgtgtccaagttcaaagaagcatctcagaagcatgtgaaaatggtttatgt  
atccttgattggatgttaatccctgaataatgagagtgccccagattgatacattctta  
caaccctctctcacacccctgttatccctgttctgccacaacataggctccgtaattt  
ttcaatgtgtatgctatttgcttataaatcagatactgtatttctccacttaggctgtg  
ctgagacctaaccctagtatttggtctgcaggcaatgaaggaggtaggggatatggagg  
agaataagcatcatcgttggggcccttgcccttaggaggagtcttggcaggattccaggca  
aggagaggcctgtctcctatagcaggagaaaagatagctgcttctgctggccttgaagggt  
taggagaatccaggaattcaaaattctcacattaatctat

>IGR3094a

ttggtctgcaggcaatgaaggaggtaggggatatggaggagaataagcatcatcgttgg  
ggcccttgcccttaggaggagtcttggcaggattccaggcaaggagaggcttgtctcctat  
agcaggagaaagatagctgcttctgctggccttgaaggtttaggagaatccaggaattca  
aaattctcacattaatctattcaaatgttccattcttgttccagggtccatatgtt  
cctatcaggggccatgactccattgtagaaagtagagctatcacagctgtgaatccctcc  
ttgcagggtctgccttctaggaccactcttatgtcactgtcttagcccagatttctcct  
gaaagcaaagcctgagtcagagtttgtgtgtaggtgatttattgggaatggatccaaa  
ggaacaggaataagtactggggagagtaaaacaggaaagaagggaagccaatataagag  
tgcagaggccagatgtggtggctcacacctgtaatcctagcacttgggaggccgaggtg  
ggtggatcatgaaatgaggagttcaagaccagcctggccaagatggtgaaacccnctn  
nctactaaaaatacaaaaattagccangcgtggtggcacacacctntaatccagctact  
ngggaggctgagncagnanaattgcttnaaccnnggagg

>IGR3095a

gctcacacctgtaatcctagcacttgggaggccgaggtgggtggatcatgaaatgagga  
gttcaagaccagcctggccaagatggtgaaacccnctnnctactaaaaatacaaaaat  
tagccangcgtggtggcacacacctntaatccagctactnnggaggctgagncagnana  
attgcttnaaccnnggaggcagaggttgaatgagccaagatcgcgccactgcactcca  
gcctgggagacagagcgagactccgtctcaaaaaaaaaaaaaaagtcagagtctcaga  
ccagcccgaagagctgcagccgccttttgcgcctccctgcctlccccatcctccctgcc  
gacatcatgctccagttcctgcttgaattacttggcaatgtgattggaatgtatctgg  
ctcagaactatgccacgccaacctggataaaacacttgatgaaatgaaaagggaatg  
ccgagaaaacccccctagtcatgaggccgactccagcactgccttctggatacactgat  
tgcaccactcttgaggggcctctttaccatctcaacaaaggcttttgtttcatctcca  
acctcagcgatttctgcttggctagaccgggtgctgccttaggacaaaatagggccac  
aagttaagaactacctatgtagtgtgacagatcccctgcc

>IGR3096a

catgaggccgactccagcactgccttctggatacactgattgcaccactcttgagggcct  
cctttaccatctcaacaaaggcttttgtttcatctccaacctcagcgatttctgctt

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted March 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

-327-

ggctagacccgggtgctgccttaggacaaaaatagggccacaagttaagaactacctatgt  
agtgtgacagatcccctgccaggtgtttaagggtacatgtccactgcctgaaccctgaa  
ggccaggcaatgagccaaggccatgggtatagctgaggaataggtgtccctgggaaccc  
aaacatcctggagaatagctgagaacctaccaagggaacagtcccatcacacacata  
gtaggtaaagagacagaaaattagcttagagatgggaggtggcacggatctctaaagctg  
tcccgtgccattcaggagtgcctcatgcataagtcttaataaactatctactagccaa  
gctgaacttgtcccagacatgcttggtctcttgcctcccagtttgggtaaggttt  
ttttaataacaattccaggttttctcattacaattgctgtcatgagcaggatctgaga  
aaccaatggatgaattaggaaggcgcatctcgggggagaatcctagggtggttggaaca  
tgcattgtggcgtggagttgcccactgctcaatttcaca

&gt;IGR3097a

gcttggtctcttgcctcccagtttgggtaaggttttttaataacaattccagg  
ttttctcattacaattgctgtcatgagcaggatctgagaaaccaatggatgaattagga  
aggcgcatctcgggggagaatcctagggtggttggaacatgcatgtggcgtggagtgc  
ccgactgctcaattccacaggccaccgtggactctgggaaacactggcagaaactgaa  
tcacatttgaagaagttaagatataaaatagataaagataataaatgtgctattgt  
tgcaataagggttagctactgagaaatcatgagagcaggaaaggagaaagggtaaaaact  
cctgcagaagggtgaaaggcatgccaggtttcttaggacaccagcaggttcatatgatgg  
cctattctgtgcacgttctaaaactgatgggcaataacaacaacaaaaaaaaga  
gctcaaatgggtaagctgcaactatagagttaaatagcatcttcatatgctctctgttc  
tctctttttcccatgctttgaatctgctgttattaagccaccgtgttgagataaa  
actcactgtttatggtaacactaattcaaggttatttgagattttgtttcttataca  
attaagccagttctagttaaataataaataaatgaa

&gt;IGR3098a

actatagagttaaatagcatcttcatatgctctctgttctcttcttttcccatg  
ctttgaatctgctgttattaagccaccgtgttgagataaaactcactgtttatggtaaca  
ctaattcaaggttatttggagattttgttttcttatacaattaagccagttctagttaa  
aatgtaacaataaaatgaaaacgaaaaggaaaaagaggttttaaaatcaaaactgcc  
atggaaacttcttccccaaatttgatccacagcttcttggtacattatcaggga  
aaatagagcttagccataacaggtcccaatttgcataaagtaatttgggtccaactgtc  
tttgtaaaaacaacaaatttattatattgtctcatggctagagttctgaagtaaaatta  
tcagatcttgtgtatgtatatacatgtttaatatattatattatgtgcatgtatt  
atatgttctaactgctacaaaataaaattatagataaatgggtataaagtccaaatgct  
tttcaagttcacaggaattcaataatcttgcataaataagttggcttttaattattagt  
aaataaaaaataagatatcttcaaaaggtgcagcatattttgtctgagctctctgat  
aaaatacactttatattgcctctgctagatactttaag

&gt;IGR3099a

aaataaaattatagataaatgggtataaagtccaaatgcttttcaagttcacaggaattc  
aataatcttgcataaataagttggcttttaattattagtaaaaaataaagatatct  
tcaaaaggtgcagcatatcttctgtctgagcttctgataaaatcacctttatattgc  
ctctgctagatactttaagggtcagggttttacatgaaagttagaagactgtaaaccca  
gccaaaaataaaatgatcttctgtatgattttttgataagcaagactaatttcgata

ttgttggttaatgaaaacaactgaattttctgagttatcagcaggaatccccatgtgtt  
taactttaaggtcttgcttagatgaacacctgatattcacaagctatgaaatgggttaa  
cagggaaataacttgcaatgacgattagctttgtgactgtcttgggtctcacaagtaat  
ctagataaactgctaaaaatgaataaactgagtacatgaaatgagataaatgtgtgtag  
gtgaaaattctgtatagttaaaatctaaaattacttttaggtactcattgaatgtctag  
gtcatttccagtttaaaaagggttatgatatgggcgaggtatttgggacctaatgagc  
tagataaaaacaaggactgggccgggcgcggtggctcacg

>IGR3100a

gaataaactgagtacatgtaaatgagataaatgtgtgtaggtgaaaattctgtatagtt  
aaaatcttaaaattacttttaggtactcattgaatgtctaggtcatttccagtttaaaaag  
ggttatgatatgggcgaggtatttgggaccttaatgagctagataaaaacaaggactgg  
gccgggcgcggtggctcacgcctgtaatcccagcacttgggaggccgaggcaggcggat  
cacgaggtcaagagatccagaccatcctggccaacatggtgaaccccgctctactaat  
aatacaaaaattagctggcagctgggtggcgcgtgcctgtagtcccagctactcaggaggct  
gaggcaagaaaagctcttgaacttgggaggcagaggtgcagtgcagccgaaatcatgcca  
ctgcactccagcctggcgacagagtgcactctgttgcaaacgaggaccaagtccagga  
aataatcaaagaacaaaaaggggatgagccaattgaatgtacacttgccttggtataggc  
aggcaattaacacgaaaaaataccacctgccagggggatgcttgaaatcacctgaacaa  
tccaggaattacataaggcacaatagtccagagcacctataacagccctatgtggcctg  
caaagaagccatatgatacctagaaaatgacagtaaactg

>IGR3101a

gggatgagccaattgaatgtacacttgccttggtataggcaggcaattaacacgaaaaa  
taccactgccagggggatgctttgaaatcacctgaacaatccaggaattacataaggca  
caaatagtcagagcacctataacagccctatgtggcctgcaaagaagccatatgatacc  
tagaaaatgacagtaaaactgccgtgagctaaacagagtgcacccccgtacctgcagct  
gtaccgggtattgctcagctgctagagcaaatggctcctaagctgggaaatgtccatgct  
gtgattaatttggctaattgccttttaaagtatttcttttagcagacgattcacaggagcag  
tttgcatctatttgggagggcaacaatggatttccaggtgctaccacaagaatatctg  
tgcagccccaccgtctttcatgatgattgcacaggacctgtctagattcttgcctacc  
tcagtcttctgttttaccatactgataatataatgttaacctcagaatctcttacaat  
ctggagactgcctgcacaccatcttagacagcctaaaaaggacagggaatgggaagtca  
acccccaaaacatacaagggccaggtgtagccatcaaatcctaggaattacctggatgg  
gtaagacacgaaacatacccagagctgttattgataagat

>IGR3102a

tactgataatataatgttaacctcagaatctcttacaatctgggagactgcctgcacac  
catcttagacagcctaaaaaggacagggaatgggaagtcaacccccaaaacatacaagg  
cccagtgtagccatcaaatcctaggaattacctggatgggtaagacacgaaacataccc  
agagctgttattgataagatagcacagtagcctattcctcagacaataaagcaactcac  
gttttctaggtttattaggctactggaaaatattcatctctcatttgacacaaacctc  
tggccttcacacacctagtaaaaagggtgcaaaaatgggactggacacataaagagcaa  
gaggcatttgacaaagcaaaaatgttggtaaaacaagcccaagcattaggtgccccacag  
ccacagcaccctttgcattagaagtcactagagataccgcagggtgaaatggtgtttg

tggcaaaagcaaccaacagtaatggtacttgaagatttgggtctcaattatggaaggggg  
cataatcccactatatagtcctggagcaataactctggctgtatatagggcattgcaaca  
aatggaggccatcaccagaaagcaaacatcacataaaaacttcctctctataaaagg  
ggagatggaggggccttctagccaagcccatctctgggatg

>IGR3103a

aatggtacttgaagatttgggtctcaattatggaagggggcataatcccactatatagtc  
ctggagcaataactctggctgtatatagggcattgcaacaaatggaggccatcaccagaa  
agcaaacatcacataaaaacttcctctctataaaaggggagatggaggggccttctag  
ccaagcccatctctgggatgatacaatcacacactgctgaagtggcatgcctatctacaa  
cagaaggtgtcttgcctatgagtcctgaagtcaggcaccacagaaaatgctcagacca  
tcactttgaacaagtgggaagggggccgacatggcaatgaatctacctactaggccaacca  
tcatatatgaagggattccattgataccactagggcctaatacactgatgggtctagca  
aaggcaccacacacaaatggttggcaatcatggtgaatatggacactgacaacatatggt  
tagaatgggaattaggacaaagcagtcgaatgggcatgctacaggcagtttgatactca  
tcaccacaagccctggccattagtcatttgcacagataattggactacatacagaggcc  
ttaccatgtggatcaatcagatgccacagacaattggcaagtttggggcaggatcctct  
ggggaatgacatgtggcaagacatccacatcaggttaca

>IGR3104a

agcagtcgaatgggcatgctacaggcagtttgatactcatcaccacaagccctggcca  
ttagtcatttgcacagataattggactacatacagaggccttaccatgtggatcaatcag  
agtgccacagacaattggcaagtttggggcaggatcctctggggaatgacatgtggcaa  
gacatccacatcaggttacaggaaagggatgtccatcttgtatgtaccatatggatgca  
catagcccaacaaccttctggaatcaaaaggcgaatggccttactattcacgtgcag  
gcaatttggccaagcccatccaggaaatgccgtatgtgcacatcataaaaacggccacc  
aggggcaatcacagagtggcccatagcaaaagcagcaggcatccctatccaataagcaaa  
tgttttggcagctgttcagaacctgagatctgtcacaactgtgacctagaaagattcc  
ctccacaccaggtcacatacattgagccatacaaaactatgtgagcctggcaagtcaattg  
tattggtcccctgccccagaatagaaagaaaaggtatgccttaacttgtatggacacaac  
ggggctgctacaggccttccaataaaatgtccactcaactggagatcatcaaatgtct  
cactgctcttttgtgtgtgtgtgtgtgagacagaatcttg

>IGR3105a

attgagccatacaaaactatgtgagcctggcaagtcaattgtattggtcccctgccccaga  
atagaaagaaaaggtatgccttaacttgtatggacacaacggggctgctacaggccttcc  
caataaaatgtccactcaactggagatcatcaaatgtctcactgctcttttgtgtgtgt  
gtgtgtgagacagaatcttgcctgtccccaggctggggtgcagtggtgcgatcttggc  
tactgcaacctccgcctctcaagtagctgggatcacagggtgccacctgtaatacaaaa  
acgcctggctaatttttatatttttaggagagatgggtttcacatgttggccaggttg  
gtctcgaactcctgacctcaagtgtaccacccacctcagcctccaaagtgtgggatta  
caagcgtgagctaccatgccttgacctcactgctcttaacgtcatgtatggcatacaaaa  
aaggatagataatgatcaaggcccaattcacaggccataatattaacactgggcatca  
gaacaaaacatagactgaaagttccacttaccatataaccaaacaggggcaggccttaca  
tgcattgtcttaggactggactaagaatctccctgtaatacaaaattttaaatgtcaccca

ctacatgcatggcatcacttcctgtgaatggttggaag

>IGR3106a

gccccaaattcacaggccataatattaacactgggcatcagaacaaaacatagactgaaa  
gttccacttaccatataaccaacaggggcaggccttacatgcattgtcttaggactgga  
ctaagaatctccctgtaatacaaatTTAAATgtcaccactaccatgcatggcatcact  
tcctgtgaatggttggaagggttTgaaaccaggccccacaaactcttggggttacctct  
gagactcagatccatgatcctgaaacaaatggccagactttgccctgagcacatcagt  
gatctaccaagtggcgtggtgctacatggacccaaagttgagctggaaaatccccatac  
tagatcgattttatagcgtggaggacaccatgaagactgactgaggggaaatggtccca  
gccgtgctccctgatggagatccgagatactgacgttatcaacatgcagcaacaccaaca  
cctgctagatgcgttaaatgtggatagcacaggcaaggccagaaattaccaattggctt  
tatgccacccctgtggagggaaccctatatagtactgtaagccaggctcgaggccag  
ggcatctgccctaatagggccaatgggaaaaatgattatgttagcaataattaagtaca  
aggaatagatatacctatgagggttctactaaacgcctg

>IGR3107a

tggatagcacaggcaaggccagaaattaccaattggctttatgccacccctgtggagg  
gaaaccctatatagtactgtaagccaggctcgaggccaggcatctgccctaatagggc  
caatgggaaaaatgattatgttagcaataattaagttacaaggaatagatatacctatga  
gggtttctactaaacgcctgtgtttatgccaaaggccatggcttctgctacctatgta  
gntagtaatgtcttctggactgggctgcagctgcagcaacagtcaacaaccagccctgt  
tactgggtatagggatacctccccctgtcaaatgataatggcatgccttggaatattctg  
cctttctcccaacagaactggaatgattgcttcaacagcatcaataaggcaatccggctc  
actggggactgcctccactggaggccaaattgccaacatgacagagaccaaacaacata  
cgctctcatagggactacctgttatttctgataaagagaatcatgtcacagatgctt  
aaatcatttgcactcagatccatgatatagttcaattaggttactttgactcattctt  
aaattaggtacacagcttacctactgtggaattatgtttgctaataggcatcataat  
tataganagcttctgcttttatgctcttatgtataccat

>IGR3108a

gtattttctctgataaagagaatcatgtcacagatgctttaaatcatttgcactcaga  
tccatgataatgttcaattaggttactttgactcattcttaaattaggtacacagcttac  
ctactgtctggaattatgtttgctaataggcatcataattataganagcttctgctttt  
tatgctcttatgtataccatggaagtggcctgtatccacaaactgtggtatatacattata  
gacctctatagctcttccctcgtttcctgctcagggactctcgagcaagggtggtggaa  
agaatataagagctggggaatgggatgaattgaagtatgacaggttccccggccaggtga  
ctcaagggtgtatgtccgtgcctgaactctgaagatcagggtgatgaccaaggccatgg  
taccagccaaggagcaaatgacctgaggacccaacatcccagagaatagctgagaac  
ctaccaagggaagagtgccatcacacacagaagaagcaagagccagaaaattagct  
taaaagcagcttagggatgggaggtggcacagatctctaaagctgtccactgccatcca  
ggaatgccttgtgtgaagtctcataaactcatttgcctaccaagctggacttgcctga  
ggcactctttggtctcttggctccctctcaatttgggaga

>IGR3109a



atcacacacacagaagaagcaaagagccagaaaattagcttaaaagcagcttagggatgg  
gaggtggcacagatctctaaagctgtcccactgccatccaggaatgccttgtgttaagt  
cctcataaactcatttgcttaccagctggacttgtctgaggcactcttggctcttgg  
ctccctctcaatttgggagaaggtattttttaatacaatttgggttttcttgttac  
attacccttatatttccgacatccttatctcttccacatcttcttcagccgttggg  
aggttctaagactggaattacggtgctagattagtgaacatgacctttaatgagtagtct  
ttcccttattcttgggatttggactacctttgtcagatgaaaaattggtgagtttgt  
gtagctgattggatgcaaataatgctgatttcacattttagcaaagatgcttgtaaaca  
tttggtagcgaattgtgtgttctaagtaattaaaatctatttagaagccaaagaagaa  
gaagaggaagaggaaagaagaagaagaggaagaggaagaagaagaagaagaagaaga  
agaagaagaagaagaagaagaagaagaaaaagaagaagaagaagaggaagaagaa  
gaagaatgcagcagtaggtgtttacagatgaagaaatt

>IGR3110a

tttctaagtaattaaaatctatttagaagccaaagaagaagaagaggaagaggaaagaag  
aagaagaggaagaggaagaagaagaagaagaagaagaagaagaagaagaagaag  
aagaagaagaaaagaagaagaagaagaagaggaagaagaagaagaatgcagcagtaggtt  
gtttacagatgaagaaatttgggtatgggtctcagaaatgtccatctttaaggttcaga  
agtagggaattatttaggtctgggtgagatacctatttgggagtgggtcataactgcaga  
gttctgaggcccttgttgtgacagcagagccagccaggggtcctggttgcaagcatgct  
cacagaattgatgggaaagctgaggtactgctgagataagcagaaatcagctgttgaga  
tggcaccgcctgggaagtagacagaccagagtggagccctaacagggcagcctgttca  
gactgagcctgaaggggaggagtggtccttactgggccaggtggcctctgatcactgt  
cctcccagaacaagtccagtgtggttgagtaagagcacaaaaggagggtagggacagtt  
tagaagggatgtggttatttagacagcgcaaacagcacaaacaaccctagacaatgagcat  
ctggggaggaatggaggagctaggacagggccctgaggag

>IGR3111a

agtggctccttgactgggccaggtggcctctgatcactgtcctcccagaacaagtccagt  
gtggctggagtaagagcacaaaaggaggtagggacagtttagaagggatgtggttatta  
gacagcgcaaacagcacaaacaaccctagacaatgagcatctggggaggaatggaggagc  
taggacagggccttgaggagtgggtgcctcaggggcaggcaagagagtggacaggaacact  
ggctgggaaggcacagggtgacaggactgaggagaaagagacttctccaccagaaatc  
tcttctgggtggtgagacagtcctcagcaattggagagagagccctgggggctgggaag  
gggccagtccaggtgtctctcagcaggtcctggaaccacggagggtcagtgagtgggtg  
gggatgacctttagccgggatcatgaccagacagtgagtcaagcaggcatggtggtgta  
ggttcatgcatacagagttggtgatcaggtgctgtggcaccagccttgtccacactcag  
atccaaagcttcaggggtcaccttactttgccagcttccaccattccatgccccatgc  
aaaaagttggaaggttagcctgcactctgggtgttctggggaccttgccaagtggaa  
acagatcagcacccttcagaaatggcttggtcagagtcac

>IGR3112a

ggtgatcaggtgctgtggcaccagccttgtccacactcagatccaaagcttcaggggtca  
cctttacttggccagcttccaccattccatgccccatgcaaaaagttggaaggttgag  
cctgcactctgggtgttctggggaccttgccaagtggaaacagatcagcacccttcaga

aatggcttggtcagagtcactaaaccattggtaggcaggcaacactctccatggaagact  
ggtatgcgccgttacttttggttgccccgccatggagatttgctagggtgtgtgtgacct  
tggcaagtttttaacctttctgagctcatccataaaatggggataataaccatacttcc  
tttctggttggtatgaggattaaaaacaatcatactgttactaagggttggtgagatgaa  
ggcctgggacacattagctcccataatagttattatccaactcccttcccttcttctgag  
actgtgggtgtgtccagcttcccatgaaaatcaattacagaccaagaacacacctggat  
ggcagctgagtggttgcactgcagccattgtcagtgaaagctggtgtgtgtgtgcgtgt  
gtgtgtgtgtgtgtgtgcgcgcgcgcgcgcgtgggtgtcgggggtggtgcatcagcctct  
gagcttggctcaccgggcctgacagaccacttaagggt

>IGR3113a

tcccatgaaaatcaattacagaccaagaacacacctggatggcagctgagtggttctgca  
ctgcagccattgtcagtgaaagctggtgtgtgtgtgcgtgtgtgtgtgtgtgtgtgcgc  
gcgcgcgcgcgtgggtgtcgggggtggtgcatcagcctctgagcttggctcaccgggcct  
gacagaccacttaagggtgtgtaatgcggtttctgagcccatggtgagaccgact  
ccagacctgcaggaccagtgaggtctctagcagctctcctgggatttctagtctctg  
cattccagccacaaatggatgtatgtcagacactagcaaagtgagggttggtttctgta  
gggacctaatagtttccacttgtggtagaggggacacaggaggacagtgcttgcctat  
tagagaaacctcttactaccttaaaccttttagaggttccacctccattcagatgtg  
ctgtgggaatgtgtgagaagacagattattctgtgagaaaatgataaaccaggaagt  
acatgaaaagcaagtcaggggtcggcctggggtgcaagacaagaagtggttaagaatga  
gtgtccaggatagcactggagtgacgtagctggacaggggcacccagaggtggagggg  
aggtggggcactccccaggtggggcagagggactcagggc

>IGR3114a

agacagattattctgtgagaaaatgataaaccaggaagttacatgaaaagcaagtcaggg  
gtcggcctggggtgcaagacaagaagtggttaagaatgagttgtccaggatagcactgg  
agtgcacgtagctggacaggggcacccagaggtggaggggaggtggggcactccccaggt  
ggggcagagggactcagggccacagcccaggcttctgggcatcatggtgtggtgcaagt  
cacaacactgtctccaccatccaactcagcagttcaagggtgtgagcccaggggccaag  
ctagcacacccctagaggggtgagtccttgccatgaaggaggggtggttgaagct  
gcatctgggctccgcctaccttaccctttcttgggttcttaggaggaaagtatcaaa  
taacaaagcttgtcactcagagaaccagaaaggactccatttgtgttcaacctccttg  
agggtcaaggaagcctgcaagagctttagagagagtttgatggggtgaacttacagata  
agcacaatgagagttacagaggcacaagttgtccacagaggccagcaggggctgtgtacc  
tcatgtggcctgtgagctgggatttgaatttagactctgtcctaagagcagtgaggag  
ccatggaaactataataggcaagattgacaggggaattgca

>IGR3115a

gagtcctgaggagagtttgatggggctgaacttacagataagcacaatgagagttacaga  
ggcacaagttgtccacagaggccagcaggggctgtgtacctcatgtggcctgtgagctg  
ggatttggaaatttagactctgtcctaagagcagtgaggagccatggaaactataataggc  
aagattgacaggggaattgcacttgaaaaacctctttagctgttatgtagagaaaggatt  
gagggagggggccaggcaggagacagggagacaaggcagaggcccttacactgttcagcat  
gagacagtggtgtgtgactggggagagtggtgtagtttgaattagttagggtgaacg

-333-

cagtcacgttgcactggttttactgcgtctacctttgccccttagggcctattctcc  
atacagcagacaatgtgacccagtttaaataatccaggtcatgccgtcctctggc  
ttttcatctcagagtaaaagccttaccatggctgtaggagaacagcctgttgc  
gtggcaagaatgatgcttttttttttttaacagggtctcactctgttgcctaggct  
cgagtgcagtggcaagatcatagctcactgcagcctcgaactcctgggctcaaggggtcc  
tcccacctcagccttctgagtagtttgactataggtgca

&gt;IGR3116a

tcaaagtccttaccatggctgtaggagaacagcctgttgcgtggcaagaatgatgctttt  
tttttttttaacagggtctcactctgttgcctaggctcgagtgcagtggcaagatca  
tagctcactgcagcctcgaactcctgggtcaaggggtcctcccacctcagccttctgag  
tagtttgactataggtgcatgccgccacagctggctatttttttcatttttttt  
ttctagaggggggtctcgtatgttggccaggttagtctcaactcctggcctgaaag  
atcctcccgccttggcctcccaagtgctgggattacaggtgtgggacctgttccaggc  
cactgatccaaaaccaccgtaataaccatgtttgaccttagatgccaagatattcat  
cagcaagatctttaacaatgcctgtagaatagaaaactctcataaagatgcttattta  
acctctccagtggtcacagcttggcaagaaagtctgaagacgggaccagctgcacatg  
tttaccctaagagcttgcataataaggatacttctggaaggctggttggtgtgagga  
ttcagtttgcagccactcagacatcacttctgttcgtaagtcctcttatataattct  
ctctgagaaaatggattgtcaacctcttcttggcctc

&gt;IGR3117a

tcttggcaagaaagtctgaagacgggaccagctgcacatgtttaccctaagagcttgc  
atataaaggatacttctggaaggctggttggtgtgaggattcagcttgcagccactcg  
agacatcacttctgttcgtaagtcctcttatataattctctctgagaaaatggattgt  
caacctcttcttggcctctcagctctctggccttgggttgcatagctcctgctatc  
catggaacaatggctcacaagggccaacacagccttgcctccctcacatctctgacga  
cctcatctacttccagccacctcacttatactactcagtcactgcttgcctagggc  
cttaggatttctgtgccctctgcctggaatgtaatccccccagatacctgcacagatga  
tatcttaccacctcagttctctgccccaaatgttacctatctgtgaggccttccagatt  
ccatatagaagagaatcccttatgctctactgtaatgccttcttatttcttgatagc  
actgcttatagcctgtagtattttacatgttcgttcaaaatgtttcctagggtgcaac  
acaatgcctggcatacagaaggttcttaaggtattttgttttggagacagagctt  
gctctgtcaccacgctggagtgcagtggcgtgacttgg

&gt;IGR3118a

ttatgctctactgtaatgccttcttatttccctgatagcactgcttatagcctgtagt  
attttacatgttcgttcaaaatgtttcctagggtgcaacacaatgcctggcatacagaa  
ggttcttaataggtattttgttttggagacagagcttgcctctgcaccacgctgga  
gtgcagtggcgtgatcttggctcactgcaacctccacgtctgggtcaagcaagtctcc  
tgctcagcctcctgagcagctgggactacaggtgattgccaccacacncgggataatt  
ttgtatttttagcagagacggggtttgccatgttggccagactggtcttgaactcctgg  
cctcaagtatccccccaccttggcctcccaagtgctgggattacaggcgtgagccac  
tgtgcatgacctttaataaatatttagttgactgagtgagttgaggttgaggatgcagg  
aggagcaggtgccccccaggacagcagtcaccaacctttcggcaccagggactggtt

-334-

tgtgaaagacaacttttccatggatggagggcagggatggtttcaggatgattcaaacac  
attacacttattgtgcactttattcctattattattacattgtaatatataatgaaataa  
ttacatgactcaccataatgtatggtgaaggaagccctga

&gt;IGR3119a

gacagcagtcaccaacttttccgaccaggactggtttgtgaaagacaacttttcca  
tggatggagggcagggatggtttcaggatgattcaaacacattacacttattgtgcactt  
tattcctattattattacattgtaatatataatgaaataattacatgactcaccataatg  
talggtgaaggaagccctgagcttgtttcctgcaactagatggcccatctgggggtga  
tgggagacagtacagatcatcagacgttagattctcataaggaatgtacagcctagatc  
ccttgcttgcacagtcacaatagggttcatactcctggaatcctagaatcctagaatcc  
ctactcctagaatcctagaattagagaatctaataatgccactgttgatctgacaggagatgg  
agctcaggtggtaatgcaagcaatagtgcggctgtaaatacagatgaagcttcactcg  
cttgcaagccactcacctcctgctgtgcaaccaatttctagcaggccatggtctatggc  
ctggggattgaagacccctgctccaagacttacctcccactgagaactcaggcaggatgc  
ttggaggtgaggtgaaaggtagtgggaggaaggaagccagtgatgtgtgagtgagggtg  
tgtgtgcttggtgcctgagtgagggtgggtgcttctcca

&gt;IGR3120a

tgtgtgcaaccaatttctagcaggccatggtctatggcctggggattgaagacccctg  
ctccaagacttacctcccactgagaactcaggcaggatgcttggaggtgaggtgaaagg  
agtgggaggaaggaagccagtgatgtgtgagtgagggtgtgtgtgcttgtgtgcctgag  
tgagggtgggtgcttctccaggacccctgtacctccagttcctggcctgggtggaggct  
gggcaggacagaggttaacttgagccagggtctgaccaaggagataacaggttgccag  
aggcaccaggcaaaactggaagggtgggatggaggcatgtggatggaaactattaact  
ctccctggggatgggagggccgaggcttctctaggggagggggcagtagagtgggccc  
ttgaagagttagtaggagtttctgtagccatgacaaaagaagaaggcattttgagcttc  
agaggtctgagggtatgaaaagggtgactagctcagaggatgctggactggactgtctg  
ctgtagcagaggaggtgagacaaagtatgcagcagcccagggtcagagaggctttaaag  
ctagtgggaggaccagggtccatcctgaggggcccagggtcagagaggctttaaagc  
ctaggcagaggaccaggaactccatcctgagggccctgag

&gt;IGR3121a

aagggtgactagctcagaggatgctggactggactgtctgctgtagcagaggaggtgaga  
caaagtagtcagcagcccagggtcagagaggctttaaagctagtgaggaggaccaggac  
tccatcctgagggccccgagggtcagagaggctttaaagcctaggcagaggaccagggaac  
tccatcctgagggccctgagggtcaggagactttaaaggttaggaggaggaccagggtgact  
ccatcctgagggccctggaagaggtgaagcaaaggaatgagagattccttcagctgccct  
gaaatgggtctaaaatgcttgggaggcaaatcctagacacagtgttggttaggatgtt  
atggctggcatgaggggttagaggatgatatccatgtcttgggtgaaagccctgagg  
taaggaactgggcccctggggttcaggaggatgtagcaggttggggacaacagtgaaggt  
ggttctagccaggttaggtggagcctggagcactgtgaattggggatcctggatctggtt  
ccccctcctggagagagactctgatgtccccgtgtctcagtactgggaccctgggcatc  
aaacctgtcctatgaggaccctgtccaagctttcatggctgactacactcaggggccc  
ctgggcagacgaggtgggctgggggactgggttagaggctg

## &gt;IGR3122a

gagcctggagcactgtgaattggggatcctggatctggtccccctcctggagagagact  
ctgatgtccccgtctcagctactgggacctgggccatacaaaccttgctctatgaggac  
cctgtcccaagcttttcatggtcactacactcagggccccctgggcagacgaggtgggct  
gggggactgggtagaggctgggccttgaagctggggaaaggacaaatcaggctgtcagct  
ctgaatgccactcccccttagctgccctccaagccaccccccaaccaggatgccaggcagg  
ggctgctgtagtgtgctgaacctgaaggggtggagctgttgatctcgggtagcctatg  
gtggcaggggagcctcttgggtggtagtctgttgggggaaggggtattgcatgcatg  
ggattaagggtgagtaccagcagctagtggatctgtggtggccagtgggagagtcgagttt  
ctgcgggtgagtgggagtgagaggtggggggccaggggccatggctcccgtattttcca  
cccactcctgtgcttaataatgcttccctgctttcctgggtgccagtcacctctcctct  
cccacatgactgggtggggctgggaccaagtcagcggaggcagggtgggcaggcaagg  
gcagactcctccaccacccaccctatttgggtgtggctg

## &gt;IGR3123a

gaggtgggggccaggggcccatggctcccgtattttccaccactcctgtgcttaataa  
tgcttcctgctttcctgggtgccagtcacctctcctctccacctatgactgggtggg  
gctgggaccaagtgcgcggaggcagggtgggcaggcaagggcagactcctccaccaccc  
accctatttgggtgtgggtgcaggagcgtgtgtgcgtgcacacctgcgcagcgtacgg  
tggggcgcctcagggcctcaacgcacacagcttgaccttgggaagcaaaaggagaca  
agggccagacatgatctggggtcaccagcaggaccaggacgccacctgcctcactgctc  
taccagcacctgccattgccctgaactgtgctccttcagggaaggaggaggcaaaagg  
agccttaagagggaatctctagcacaaatgaacatgaacagaagatctatgagaagaa  
aggaaaataaaaaactaagcgaagacagacacaacatctgaataaatgcacaggaaagtgc  
agatcacagtcctctctggaggaaaagactaatgccagttcttccaaagtgccttag  
attcagggaacctggtcacagttcagagggttgcctttccagagcctgaggcatgcagt  
ctcaactctgacaactggaaatgtagaggaatagctttg

## &gt;IGR3124a

gaagacagacacaacatctgaataaatgcacaggaaagtgcagatcacagtcctcttga  
ggaaaagactaatgccagttcttccaaagtgccttagattcagggaacctggtcac  
agttcagagggttgcctttccagagcctgaggcatgcagtcacactctgacaactgga  
aatgtagaggaatagctttgacaggtttgtaaatgaccaacaaggaggagagattggcta  
ttaaactccaacacagtagtaattatacattaacagggaatagatcagatgaccagaat  
ccagtaacaaagattcgtacaaaattaggaaaagtctaccaatcattaagaagaagt  
aaataagccttggaaaaaaatcatgaagggtttggggttaactacacaagaactgctctt  
ttgagagtaggaccactctgttcccttagtgctagggcaccagcaaacacaccataaat  
gctcaaaaactgaatgttcatcactggtaatcagagaaatgcaaaataaaacaaacgc  
atgacattttacttaacagactggcaaaaatgaaaaagaacataatcctgagctgg  
caggagcacaaggaaatgggtactgtctcgtgctgatgatgaatgtgaattgataacagt  
tttttgatttgcgatagcacaattgaaaacagcac

## &gt;IGR3125a

tcactggtaatcagagaaatgcaaatataacaaacgcataatgacattttacttaacaga  
ctggcaaaaatgaaaaagaacataatcctgagctggcaggagcacaaggaaatggg

-336-

tactgtctcgtgctgatgatgaatgtgaattgataacagttttttgtgatttgcgatag  
 cacaaaattgaaaacagcacaaatgtactctgggctcgctaaataggcactaat  
 aaaacgagtcagtttcttcccagcaagtaaaactagaggtagatccacgcgaccgg  
 agtctaggacacatctcgggagtgaaacagccacaattcacagacgatgtgtgcagccgg  
 ggcatgaaaggcccaaggcaaacaccacagaggtaacgccgggactctgaggagagg  
 gtggaagccgggacttcgaggaggggtggaattgacttagagacaggaggagcctctg  
 gagggcaaaagctgcctgggcaagtgttcttttctaaaccttcttctgtctctg  
 tctggaaatttaagcgcgccccctggtgggggagagaggaagggggaagaaaagggggtct  
 cggaggagaataaagtgtctgtgggtggaagaaacctggaacagaaaatgccagaaaaac  
 ctggaacagaagtgcagacggcccgccggcgcccggtga

&gt;IGR3126a

caagtgttcttttcttaaaccttcttctgtctctgtctggaaatttaagcgcgcc  
 ccctggtgggggagagaggaagggggaagaaaagggggtctcgaggagagaataaagtgtc  
 gtgggtggaagaaacctggaacagaaaatgccagaaaaacctggaacagaagtgcagacg  
 gcccgcggcgccccggtgatctccacactcaatcacctctccaggggagcgatcgtc  
 ctgaggctgccagcacccaccaccacccccacccgctagtccgatgacggccacaga  
 ggcttctcgcggccagctcaccttgcacacacagttccccgtgcagagtttgtgcc  
 tccctcatctcttagttctcagtaaaccttccctgacccaccaggtcatacctct  
 gtcgtcgcggcgacgcagcatccagacctcaccttctgattactagagctggccggt  
 gtgattcaggtctgccttccaccaggctgtggcccccttcagggcagcatggtaccgt  
 cctgtcactactgcacccagagcctaggacatgcctggcacctaaagcagatactactgt  
 actcgggagccatgcattggcctgcgcaggagggtggcaggccaggtgacaggtcaaggt  
 ggagcagaggagcttattagaggacagggtgaaacata

&gt;IGR3127a

accaggtgtggcccccttcagggcagcatggtacccgtctgctcactactgcacca  
 gaccctaggacatgcctggcacctaaagcagatactactgtactcgggagccatgcaggc  
 ctgcgcaggagggtggcaggccaggtgacaggttcaaggtggagcagaggagctttatta  
 gagggacagggtgaaacataattacaccggccgagcagggaccttaagaagcagggtgg  
 gacagggtcccagctcagacgagttccaccttggcattgggtacaccgccaccacgtc  
 gtagccctcggcggttcacgcgcgcttggcgtggctctcacagtagagccgtcgtc  
 cagaaagaagtaaccacgtgcttgagggtcaggccgagtcactgcacatgaagcactc  
 gggatgtagagcttgccttgacgatggtgcccctgatggggggaacgagaca  
 ggacagcgtcagtgactgatgggttcacgactgcgcccgcattccagggccctggaaggc  
 tagggtccgggaggggcagcggggggttactcacacgatgccgtggccgcagcgcgtg  
 cactcgggcagccccctgcaggccgctcagcggagcggccagcttgcggcgtgggcttg  
 aggttccgggggcccaggccagggcccaatcccctgaaa

&gt;IGR3128a

tgggttcacgactgcgcccgcattccagggccctggaaggctagggtccgggaggggcagc  
 gggggcggttactcacacgatgccgtggccgcagcgcgtgactcgggcagccccctgcag  
 gccgtcagcggagcggcagcttgcggcgtgggcttgaggttccgggggcccagg  
 cccaggccaatcccctgaacccggagcgtaggtggcatgaacggggtgaggaggtcaga  
 actccatttctcgggggtgttgggtgggcgccagacgggccatcggcaccgagactgg

ggaacgggtttggcgggcgtggggtagggggcagcgacagggggtggagagggaatcagg  
aagccagggcgtagcaagggtcgtagcaagggcgtgggaccgggccgagagaccgaagag  
ggcaggtgactgcgagggcgggacgtggggctcgtagggggcaacctgggcactgcaggga  
gtgggaaggcagatggggacaggtggcagggcgtctaccgccctcgccggccttagcat  
gccctgcaagtagcggaaggagcctgactgctgggctccgcggccacgggctcgccgg  
ctcccgcagcactcttacacctcgagcccaggtcgattctgcagtcgggctccgcgg  
gaggcctctggctgggtcagcgctgggaggagaaaagaaa

>IGR3129a

aggtggcaggcgtctaccgccctcgccggccttagcatgccctgcaagtagcggaagg  
agcctgactgcttgggctccgcggccacgggctcgccggctcccgcagcactcctgtaca  
cctcgagcccaggctcgattctgcagtcgggctccgcgggaggcctctggctgggtcag  
cgctgggaggggagaaagaataagaggaggaaggatgcagttccagccttcacctgtgg  
acttggggtctggttaaggcttatgagtcagaatgaaccagctaagaccaaggatcaag  
tgtcaggggtcagagtgggactgggtgagattgagggatcaagggttaagatgggttct  
gggcatggcaccgaaggcactctgtgctacctggggggtggagacacatgcagggtgct  
catctgggctggcagggtggcctcgtgctgccattgtgagggactggaaagcgaggggg  
ttgtccatatggagatcccaggcttggctgccatcttctggcccagtcgggtgcctga  
gggccgcctgctggttgggtgctccgtcctattagagagaggcctaaggcactgggag  
acccttggcctccagccattccttggtaacccccacccccacctgctgtgctgtgccag  
gtggtggatgtagttggcttctctgcttcggcactct

>IGR3130a

ggcttggctgccatcttctggcccagtcggggtgcctgaggggccgcctgctggttgtg  
ggctgccgtcctattagagagaggcctaaggcactgggagacctctggcctccagccat  
tccttgttaccacccccacccccacctgctgtgctgtgccagggtggatgtagttggct  
tcctctgcttcggcatctctggcctgtggtgctcagccagggaagggtattctggggaag  
ggctgggcctggggactggttatccccctgcagaaatgagaaacgtccttggaaagtacg  
acacaaaaacctgggcagctgagactcagcctgggcttgtgagccctgcagtggttctgc  
ccaccaccactcaggaaggacagtagtggggcaggcctatcccaagaagcctaaggctct  
gtgtggctacagcagagtatgtggcctcctggcagagggtggcctggtgccaagccttct  
caccttctgaactgtggtgggtactgggtaggccatggctgggaactcaaaaaacgta  
actcctgtcctacagtcagaaagggtccttactgtcatgtgtccaaggcccttgggca  
ggctgaagctcaagagtgcattgtgaggtcagcccttctgggcctacacctgtcccc  
attcctgcttccaggccacaatgagtagccttctgcag

>IGR3131a

ggtactgggtaggcccatggctgggaactcaaaaaacgtaactcctgtcctacagtcaga  
aagggtccttactgtcatgtgtccaaggcccttgggcaggctgaagctcaagagtgcc  
attgtgaggtcagcccttctgggcctacacctgtccccatttctgcttccaggcca  
caatgagtagccttctgcaggcacagcagatgaggggcagagaccaggctagggtcaag  
gctcttccccactacccacagccagcctggtgccatggctgaacatttgggtgg  
gagtgtcctgaacctccccctcagccatgaggagagggcagtagtctctgtgtgtggg  
tctgagtggggactggggatcttctccctgcagagtcagagctgtgcagttccagct  
tgcaagtgcacacaagcaccacacagaatgtaaacaggggcatgcacactctcacaatt

atgctttaagacacacacacacataaggacaacacatatgcacctaccaatctccct  
acatacaactaactacatgcgcatgggtacagagacttgagccagcactggtcaccctg  
ggaatggccatagtgccctccatagctgagactgggctagtagccagagcagcctgattt  
taggatgatgtctgaggccaggccatggggtaggtcttag

>IGR3132a

cacacataaggacaacacatatgcacctaccaatctccctacatacaactaactacatgc  
gcatgggtacagagacttgagccagcactggtcaccctgggaatggccatagtgccctc  
catagctgagactgggctagtagccagagcagcctgattttaggatgatgtctgaggcca  
ggccatggggtaggtcttagcctcagcctgggagtgcgtgtaaacctcctctgtcttac  
agtgtggtcagagagcccagtgtggacaggaaaggatgcctatcgtagtgggaagaaccc  
tggtttggacttaggaagctctgaggcatagttgagcctgtgggggttctgcctgagtac  
ccccctgcttttttaggggtgggaacctggggaacaggcagaccagcagttgggtgggccc  
ccctccatttccccacccaacagacaaacaggagggtcttgcctcaggtggcccccc  
atcaatgcagcagcaacaggaaaaccctatccacatcaggcccaacaaaagcccctgag  
aaacgtgagcgtctcacacgtgtgtctgtcgggcaggcatgcaggcagggtgacctct  
aatggggaccagatgggctgtggccagtgggggtggggctcagcctccgggcagaggctt  
tggtgggaggaggaggttgaggggactgggactgggagga

>IGR3133a

aaaaccctatccacatcaggcccaacaaaagcccctgagaaacgtgagcgtctcacac  
gtgtgtctgtcgggcaggcatgcaggcagggtgacctctaattggggaccagatgggctg  
tggccagtgggggtggggctcagcctccgggcagaggctttggtgggaggaggaggtgg  
agggactgggactgggaggaaggaggccctcactcaccctaccagcagggtgcagggg  
tccactgcagggccatcagagccactgccctcccacggtcacccatgcagctgcctctc  
taggcctgaactctgtggctaggacacacatggctacctcagttttagttgagtccag  
gggtatcccctaactgggcaagtctctcacctctctgaacctgtttcttatctatgag  
ctggggaatgtgatgtttccacatcagggttccttgggagatgaagtaagacaattgca  
tagtgccctggcataaagcacatactgttgatgaatggctgtcaggggaattcctgggc  
ccccagtcctgtattttccccctctgtgggtggtacacctgtaccatatgctcctctgc  
tctgagaaccagcctgctgccacttggtgttgaagcctcagtgattttcagcagga  
tgggggtaactacctgctttgggacactcaacttgatgg

>IGR3134a

atacttggtgatgaatggctgtcaggggaattcctgggccccagtcctgtattttccc  
cctctgtgggtgtacacctcgtaccatatgctcctctgctctgagaaccagcctgctgc  
ccacttggtgtgaagcctcagtgattttcagcaggatgggggtaactacctgcttt  
gggacactcaacttgatggaggcaggcgtgagtcagatgagcaggtgccatctccta  
gaggtcagttctagctctctgtggtctggggaggacaggctgagtggtcaaggactgc  
ctgctccacctgactgtctctccccatcacctggttctgagcataattgccactcctc  
cagaaaaccctactaaccagaaggatagtaataagttactatccttccctccacctggg  
ctaggccaagtgcctcctgtgtccacaaggcctgagagaaggaggttctcctatcg  
ccccacagggaaggtgggcctgaagttccagctggccctgtccatccactcggggatg  
tgtgccagggcacctgtgtctgtgcttagggccaactgtggtttcctcctcctgatggc  
tccagctagctccacccccccccacacccccactcaggcagagggtgggagcagcatg



gggacaatgggccctgtgtctgtgttagcaaggactcagc

>IGR3135a

tgaagttccagctggccctgtcccatcccactcggggatgtgtgccagggcaccttgtgc  
tggtcctagggccaactgtggtttctctctcctcgtatggctccagctagctccacccct  
ccccaacacccccactcaggcagaggggtgggagcagcatggggacaatgggcctgtgtc  
tgtgttagcaaggactcagccctgcaggggtgggggtgggggtgttttgcaccacccat  
ggagcccatgaccttttaagtacaaaagtggggcagcagctgagggggtgccctggtgct  
tgtggaaactccctccttctccagctctgagccactggcagcctggtcttcaaggagatca  
atgagaacaagtgtgggggcagggggagctgctctacagtcgccagcctcccaggcccac  
cggccctgagcctctcttgaagactgaacccctccccaccacgtcatctggcactgc  
tacctctgagggagggctgggcctcatgcatgagcttgagggccacacctgctgtctccc  
tctgcctggcctgtggcaaacctgggtcatttgtctatggcaacatgtacccctaccct  
aaggctctgggggtccatggggccatcagagcaagttctgagacacagatgtggccatgaa  
tcctgtgaagaacagctgaggtccaggatagagaagccca

>IGR3136a

cctcatgcatgagcttgaggccacacctgctgctccctctgcttgccgtggtgcaaa  
cctggctcattgtctatggcaacatgtaccctaccctaaggtctggggccatgggg  
ccatcagagcaagttctgagacacagatgtggccatgaatccctgtaagaacagctgag  
gtccaggatagagaagcccaagagcctttctgtggccctgtccaccacctcatctca  
cctctgtcctctcactccttccattctgtcctcccttccctggaccttcttttctctg  
aactgtggtgcaagacctcacctctgggccacacttctctccatacccccttgct  
gcttaccattcctagcccttcaggctcttggttcaatacccccttccocaggaagcact  
ccttgactccttgctgtgagtcattgtgactactctgggctccttggcccttggtcccc  
tagcccagaacttctaagtgcctttccctgccagaatgggactgcctggaaggtgta  
agcatctggctccagggatgccagccaggcagggtagggaaatagagcaagatgggattgg  
ggtagatagtgagggagaagctggggcacatccttccctctggttcagtgaagcctctc  
ctgccttggccccctttctttcatgttgagagggtggaca

>IGR3137a

cccttccctgccagaatgggcactgcctggaaaggtggtgaagcatctggctccagggatg  
ccagccaggcgagggtagggaatagagcaagatgggattggggtagatagtgaaggagaag  
ctggggcacatccttccctctggttcagtgaagcctctccctgccttggcccttttctt  
tcattgttgagagggtggacaaaggcaggcccaggaggcaatgggtcccacatgctgggtcc  
catggttctggctccatcacagaccatccagtctccttggccaaactctgtggcccaga  
gatggctctggatacctcagtcatccccacttggctactccttatgccatggcaaaacaa  
ggccctagaatagcctgacccccctactcttcttgaggacaggaccagagatatgacttc  
tatcacacacagaaaggtgactgggcagacaggcctgcagcctaagttctgctagaagca  
ccacaggatggccaggagagaacttcaggcttggatagggcactcagaggagtgtccat  
agcctgaggtcactccacagcctgagactgccaccaatctccccgctgcaagcacagt  
actctttctggtctggcatcactgagcaccagagtgaactccagctggctgtgtgatag  
ccgcaaaccaaggcctagcccagatctggacatcatagg

&gt;IGR3138a

aacttcaggcttggatagggcactcagaggagtgtcccatagcctgaggtcactccacag  
cctgagactgccaccaatctccccgctgcaagcacagtgaacttcttctggtctggcat  
cactgagcaccagagtgaactccagctggctgtgtgtagccgcaaaccaaggcctagcc  
cagatcctggacatcatagggaccttgggtccagaatccaggattgcccggagtagagaca  
gagccacaccaggtgctcatcatctgaggaacatgggatggggtatggatgtggtccag  
agaaaacttctgcttcagtctctgtcttgggtatctgagagccccagtgaggacattcag  
tgcaggtgaacctgcatgctgccccctctgccctgggctcactctgagccaggccaggcc  
aggcagtgctgtacatacctggatctcaggatcgtgtggatcctgtgtgcctgagcct  
tgctgtcatcaggggcactgggcccagctcctacccctaggcctgtggcagaaattgtgat  
ggtcagatatgtctcctaccacgcccacatgcctgggagccaggatcaagaggggctgg  
gctctgggctgtgccctgcaggtagaagaacaccactccagtgttccctgtaccaca  
atggtgactgttggcaatgagccacaactctagctgcc

>IGR3139a

ggccagctcctacccctaggcctgtggcagaaattgtgatggtcagatatgtctcctacc  
acgcccaccatgcctgggagccaggatcaagaggggctgggctctgggctgtgccctgca  
ggtagaagaacaccactccagtgttccctgtaccacaatggtagctgttggcaat  
gagccacaactctagctgccatcctctgggtagggctatatgcttctgtccccatcgg  
ctgcccatacctctctagctgtggtcctggagaggctgcaggagaagccctgtgtcttc  
cctaattctccaccctctctgtggcctacagaagctcagctcaaagagggcccagcttata  
gcactgcaagccaggccctcacacattgaccagctagaagcctatccacgcacatcctctggg  
catctacagcctctgggtggggtgtggggtcaggcgtccgctcggctctggggtagggtggaa  
tggaggctctgaggggtgtgtcttctcctgtctgctgctgccggcagagtcactga  
gtctgcccagcccagatgggaaacaggccattaggaaattctgcttcgcatagaaacc  
aaaagccaaacaccactcaggagggagaaaaacataaacctgccataagcagggcag  
gcaggccgagaggctacgtgcctaaggcccagccctgtca

>IGR3140a

tcttctcctgtctgctgctgccggcagagtcactgagctgtcccagcccagatggg  
aaacaggccattaggaaattcctgcttcgcatagaaacaaaagccaaacaccactcag  
gagggagaaaaacataaacctgccataagcagggcaggcaggccgagaggctacgtg  
cctaaggcccagccctgtcactcagtagccctgtgagaaggcaggccaggaaggggcatg  
gacctggactggcaggtgggtatgaggtgaggtggttagaccaaaggggaataatgcc  
ctccaaactaccccacgaagcctcctgaggcttctcaaggtctcattactgacctagcag  
cttggccctgccttcttgcctcctcagttgagggttttaataatctatctatgcctat  
ggtcatactcactctgcacttctcgcctctgcccattccttagtccttggaggctac  
ctctctactccaggccttgggtattagagctctgtgccccagggaacaccagcccat  
agtcctgtctctagccccctcaaccaggctcccaagtgggtaccctaactcacagctct  
aactgtggcctctatctactcagaactcctctgggataaagctgggacatcttgtgtggc  
tatttggccttcaacttccctgaagttctgccagaagag

>IGR3141a

gtattagagctctgctgccccagggaacaccagcccatagtccctgtctctagcccc  
tcaaccaggctcccaagtgggtaccctaactcacagctctaactgtggcctctatctact  
cagaactcctctgggataaagctgggacatcttgtgtggctatttggccttcaactccc

tgaagttctgccagaagagcagtacaagcctgacgtctaaggctgaagggcacaaagta  
cccagagccattaatgtggcccaatgcatcagatcagaatgaagggttaatcatgtgtc  
aaccatccaggctgggctctttaaacaataacaggcaagggtaggctgtgcaa  
aggtagcctgggcccacatgtgatggacaacagggactctatcagtggcctcagtgttga  
gtgatgtcagaaaggctcctggacctatagaacatgccaggaagtgtgatttggctgg  
attgttggatgcctggcttgggctcaaagcaaaagaagcccagtgagggaagctgggcct  
ttgatacacttttcattctgtgggggagttggtggggggattagagctctctgtacaaa  
gagggcagatagggaagctggtctggggtagaacctgggagtgagagcacagggtagct  
cactccagccagctcaacaggctgatttactgcagagccc

>IGR3142a

gggctcaaagcaaaagaagcccagtgagggaagctgggcctttgatacacttttcattctg  
tgggggagttggtggggggattagagctctctgtacacaagagggcagatagggaagctg  
gtctggggtagaacctgggagtgagagcacagggtagctcactccagccagctcaacag  
gctgatttactgcagagcccttctgtgtgggtgtgtgtgtggggggcggggaggagtg  
cgttggggggccagcataggtcctggcatagcaggcaagatagggagcagagtcagaaag  
cttgaggtgggcaagtgtccaggagaagaatgttggctcagaaagtcaaggtggccct  
catgtcttgatccccagagctctgcatgtgtgagggctggagatgggggctgcagggcag  
gactcaggttttactctgactgagcaggcctggtacatcactcaatgtccagagcg  
caagatggtccataattttggtgaggaagttagggctcaagagattaaatcactttct  
ggagcacagcatagttatctctccctctctcttttatgggtaaaattatgagcataat  
tctcaaccagctctgtaatatagagaatgtgtctcactctgctccatggccagtgaca  
tttggggctgaaatgctcagagtgaacaggctcagtgga

>IGR3143a

gttgaggaagttagggctcaagagattaaatcactttctggagcacagcatagttatct  
ctccctctctctcttttatgggtaaaattatgagcataattctcaaccagctctgtaat  
agtagagaatgtgtctcactctgctccatggccagtgacatttggggctgaaatgtca  
gagtggacaggtcagtgacctctggctccatccatgcctggttggaaacaaaggactg  
gggaaggaaggaaggaaggaaggaaggaaggaaggggggacctccaccaccacctccgc  
tgacatcatacactctgagaagctcctgactcagggccctctgaggcactctccccac  
tactccactaccactagggtgcccctgttcagccacacagagtcaggctggaggtgag  
tcaggggcccagatcccagccaagtggggaagcttcagaggctcactcatgggcagagcaa  
tgctgacatttccccatccagcctgtatctcagctctggaggagggtgatgaatgtgatc  
cgtaaatgggaaaggaacccccgggctcatagaggtcatctgggcacctaaaggctccaga  
ggctggatgaggaccagcttctgtaactcaaagatggagcctcaccgtgtgccag  
ggccaagcacaacagggtgacctcacaggcctctccac

>IGR3144a

agcctgtatctcagcttgaggagggtgatgaatgtgatccgttaatgggaaaggaaacc  
ccgggctcatagaggctcctgggcacctaaaggctccagaggctggatgaggaccagctt  
tgctgaactccaaagtggagcctcctaccgtgtgccaggggccaagcacaacagggt  
gacctcacaggcctctccaccatgtttaaaggctccaagccagtggcttacctccaccc  
tgccagctcagaggcatggttagctgtgtgtgtgttggggaggcttggccacgtactt  
ccacagggggtcatggaaatcccctcagcagtgaaacaggcagagctgataagtattgcc

cgacttctgtggatcaaggtgggcaggggagtgaggatcccactcagccaggcttagg  
ccaactgcttctcagagctgagtaaagaccaggaacctgagcaaggctgggtccccccac  
ccccacccccagtgaccttctatcccaggatcattatggagcacagatgggcttggtta  
acccccgtcctcccccttctgattggctgcaaagcattacacagtccttagtgggaact  
ttcccaaataccagatttaaccagggcagaggtgtgggccacgggtggcgacagctgtggc  
agggcagctgaggggctggtaggagtagtcagcagccaag

>IGR3145a

ctatcccaggatcattatggagcacagatgggcttggttaacccccgtcctccccctt  
tgattggctgcaaagcattacacagtccttagtgggaacttttcccaaataccagattta  
ccagggcagaggtgtgggccacgggtggcgacagctgtggcagggcagctgaggggctggt  
aggagtagtcagcagccaagttaagggtctgtagtcttaggagagagccccaaaataaaa  
tttctacccactccctctctgtgtgactttaagcaccatctaacctttctgagcctc  
acttgtctctctgtgaagtgggactatagtagccctttttaagtggtaaatgaggg  
ttaaatgaggtgtgcacaagaaactactttgaaatggcatcaagctggctcactcaggg  
gaggggaaaggaatgaaacaaatgccccagaggctattcaaggcttattcagttgcct  
gcaacacttgccataagtccccaacacacttctagtctaagttaaaaggggatttctc  
ccttctaagctataactctaaacagtatctgccaggccccatgaaagtgtactcctt  
gggactgttctggatggggcaccagagctgaggcagagaggctgtgtgaagctgggc  
tcacccaaaatgccagctgccataactgccacctcgtc

>IGR3146a

cccaacacacttctagtctaagttaaaaggggatttctcccttcttaagctataactct  
aaacagtatctgccaggccccatgaaagtgtactccttgggactgttctggatgggg  
caccagagctgaggcagagaggctgtgtgaagctgggctcaccaaaatgccagctgc  
ccataactgccacctcgtccttccatctcccagcccagcccactgtgcatacctgct  
cacagacagtgtgaggtgatcgtggcagcccttgatgcggttctgtgcctccaggtgtgt  
catgagctctgtctctcaccattgatggcctggatcaggtctcctgggcacagggcagc  
caatgcagccttgctgccagcatggacctgcgagcagacaagccagatggctgggcacag  
tcatgatatggtcttctgcaagctgtgccctaggcctcctcaacctcagaacctagcc  
agtgtggcctgctaccagcatggcctgtggatgggcaagccagtggtggttgaggtcc  
ccatgtagcctggctgcagccttgctggaaacacctccaactccagcacctggaggcctg  
gcagggcagtgagatatacaagaagggttctcagggctgggacaaatggatgtgttc  
ttgcagcctgcgtatgtgccaaggacatgcaggggacac

>IGR3147a

tggcctgtggatgggcaagccgagtggtggttgaggtccccatgtagcctggctgcagc  
cttctggaacacctccaactccagcacctggaggcctggcagggcatgaggatataca  
agaagggttctcagggctgggacaaatggatgttcttgcagcctgcgtatgtcc  
caaggacatgcaggggacacagagacacatggagacatagggtctcacagatacacac  
agcatggacatatcacagataccttacacagacaaggcccaaccagacagactacacac  
cttgacctaatattcaaaccttagtgaccttgcccttctacttgccttattcaactct  
catccccacctccacaccacactctgtccagaccatgtgaatgtctatggggtgctcac  
aggeaccatatatcactacactctacacttctgcaaaagctgtccctccacctggaaca  
ttccttgactcccacatcctcctcctcagatctcagcatagaggccacttctctggg

agcctctctgggatctcactacccagtgtgctcccatgaccacctttccccctacactg  
ttcatgttaatacttcattataattaaatgggaaggtctgaacatcacctccctgagca  
agtccagggccatccagtccagctgacagcctgcgtttg

>IGR3148a

tcaccttcagatctcagcatagaggccacttctctgggagcctctctgggatctcact  
accagtgctcccatgaccacctttccccctacactgttcattgtaataacttcatta  
taattaaaatgggaaggtctgaacatcacctccctgagcaagtcagggccatccagttc  
cagctgacagcctgcgtttgggggtcagaattctaccttacttccctgcaggacagga  
actcaggctacctcagtgccactattgaccctcgggggtcaagcagtggtcacacctgga  
agctcttacaatgctggtcaactgaagaaggctagaatgggggtggagtttagactcaca  
gagatatctaagtaagcaactcagggggaatccaggccatggagcacccctcacctgcct  
tgacccaacatagccttttagaaatataatttctaccagcctctccagccagtgccag  
ctggttcaaaagctgccagtacccattctttgggtgggagctcctactggtgggaac  
tcttgaagcccagctaggtcagttcagccaggtctcagtagtgagtggaacaaagctga  
gggtctggcagctccttggtggagcctgggtgtggcactgccaagctgacctgcct  
gaagtaggctgcccaaggaaacgttcttctgaagcatga

>IGR3149a

gacccattctttgggtgggagctcctactggtgggaactcctggaagcccagctaggc  
tcagttcagccaggtctcagtagtgagtggaacaaagctgaggtgctggcagctccttggc  
tggaggcctggtgttggcactgccaagctgacctgccctgaagtaggctgcctcaagga  
aacgttcttctgaagcatgacacctcanccaactagcccatcattaatgttcacttga  
gggcctgggcacctgtgcaagcctgtcatcctgggggagacaccacttggcaccatccc  
accctcccccaaggccatcctctgctcctccccctcatggatacctgcctgtgccag  
ggcctgggctctatgtttaccataactagctcacagcaacccctcaaccacctggtga  
ggcagaggtgttctcatccctattttacagatgaagagaaagaagcttgggggagggat  
gccatccccagtcacacactggagaggagtcttcttcagggggcggctaactgcggc  
aggatgactcagccagcacaaaggggtacattcaggcttctgtgggcggaggaaagttctt  
gaaagcagtgggtggctgggatgctgccagctctattgagctaggggagttctggtcagag  
agggcgtgaggccaagaaattgtacttcccagtcacct

>IGR3150a

ctggagaggagtctttctcagggggcggctaactcggcaggatgactcagccagcaca  
aggggtacattcaggcttctgtggcgagggaagttcttgaaagcagtggtggctggga  
tgctgccagctctattgagctaggggagttctggtcagagaggcgtgaggccaagaaat  
tgtgacttcccagtcacctttacatgcattatctcattaatcctgaaggcaagccatt  
tcctagatcaggaaacggaggtccagagaagtacagaaggatagtttaattgataaaagac  
tgaatcaagatttcaatccaggccacctgattccaaatttaaactatgctcttaacacc  
tgcatttttctccaaagggggtaagggaagagagatctgaggagagatagtggtc  
caggcagaaggaccagcatgtataatggcatatctggagagaaagaagaaggaaggtgt  
atggccggagcatcatgagtgggggagagtgaggagagatgaagtcagagaagaggcagg  
gatcagatattgcagagcttctgacaccgggtgggaagctggcatttctcctgggtggc  
tgggaacctggagggtctaaagcgggaagtcacaggacagagtgggaattcaggccgatc  
cgtctagctcctaagcacaggataaacagaaagaaggaaac



-345-

aaggtgcttctctgtgcctctgacacaggccccaaagacaagatcagcctgtgtgggag  
caagggatggccgtcagatggttcagggtatctctctgtccttccagactgagagcc  
gccaaggcgaggcctgggttctctcttctgtcccttaggctggggacccccaaagg  
cagggtctgagtcctctcttttggccctccagacacaggatgtcagggtgggccagga  
tcctgtctcccctagacaggcacccccctgaacagggcctgagtcacctcctccactcct  
ctatcctcagactagccacgctccagggtgtgcccggctccttttcttctgtggca  
aggcagggccctgggaacttgaggaaacgggcctgaggctgtcctggccccggcttgt  
gtcatcttggggagggtctcacaacctcacagttaagtctcccttccctggaagc  
caaaattcctctgtgctactcccccttagggtgactgaggtcgtgaatgagagactgact  
cacgccccaaagtgggaagtggatggacctctgtcttca

&gt;IGR3155a

tgaggaaacgggcctgaggctgtcctggccccggcttgtgtcatcttggggagggggt  
ctcacaacctcacagttaagtctcccttccctggaagccaaaattcctctgtgctact  
tcccttagggtgactgaggctgtgaatgagagactgactcacgccccaaagtgggaagt  
gatggacctctgtcttctcagattcagcgaggacccagacctcctgggtcaccaagct  
ctgccggcagggaacctgatagggaaggggggtctaaatcatttggccccagatctt  
caggcaggggggtgagctgaagagtttctgggcctctgtagagctgttagacctggc  
ccatctccgcggtcttcccggtccacagtggctccccagatgaggccagcggggag  
gcgggtgcgtgaactcttgggagattcttcgcggtatcgggcagacagggccagcgtggg  
aggaggggcggtgggggtgcctgcctctgcctggaagccgctctacagcatgcggggcg  
cccagggcaacctccgcttcaagcctcgatacacaggggatctgggtcccgggcgga  
ccgcgagaacccggtctcagacatgggaccgacctgccgccacgcagccgccagactcac  
ccgtgagatggtgagggggcgcgctgaagtcccgccgccc

&gt;IGR3156a

ctgcctctgcctggaagccgctctacagcatcgggggcgccaggccaacctccgcct  
taagcctcgatacacagggatctgggtcccgggcgaccgcgagaacccggtctcag  
acatgggaccgacctgccgccacgcagccgccagactacccgtgagatgggtgagggcg  
cgctgaagtcccgggcgccaccaggcggaagccccaggcggaaggccgcgagggtca  
cggaatggggcatcggggtggagccgcagccggagcctgagccgactctgaggagcc  
gcccggccgcccgcctggacgccgcgccccgccccggcccggccgcccgtctccc  
actggcccagccccgccccgctcctgtgcctggattggccccgcggccagcccc  
acctcccacttggggggctctgaggacctccctcagccccggctgccggcaacctgg  
cacccccactcagctctcagagatccccgcttcggacggccccgacggcctggatcctg  
ctcgggcttggatctgcaggccgcggacccaaacctgctgacaccggcccttga  
agtcgcttttagggcggtgtccagccngaggaggatggaggggccacttgggggatg  
gggctgccccagctcagatacctcctcatgggcccactg

&gt;IGR3157a

agatccccgcgttcggacggccccgacggcctggatcctgtcgggccttggatctgcag  
gccgggacccaaacctgctgcacaccggcccttgaagtcgcttttagggcggtg  
ctccagccngaggaggatggaggggccacttgggggatggggctccccagctcagata  
cctcctcatggggcgactggcacacctgcggccatcctgccgtgtgaggagccctctg  
aaccaagaacctatgaaccaggggcttgcgcagcactgggcccggggacgcagacccaaa





aaccactcataaggtaccctgagttctaggcagcaggtcagacaagctgcagattctat  
ggcttctccagctctcccgaagtctttaaggaagccctcagatttctttccctgt  
aatggccttggtccttgagattgctgtattgctgagaccctatcatgctggaatac  
gtcataaggcagtcacagggcttggaagccctcttcaggg

>IGR3161a

tgagttctaggcagcaggtcagacaagctgcagattctatggcttctccagctctcccga  
aagttctttaaggaagccctcagatttctttccctgtaatggccttggtccttgag  
attgctgtattgctgagaccctatcatgctggaatacgaagtcataaggcagtcacaggg  
cttggaagccctcttcaggggtggggatgtgtggtggccaggtcacacatcccccgtccc  
tagtggccttcacgtatttactgcacacccatcaggtgtctgtgctgctggaataatca  
gactgcttatttcatgcatttcttctctgcataagtacgtattgagtactcagggatg  
ggccaggtatcatccataagggcagaggtgtgtctgtcttatttattgtgtctctcc  
agcaccgccagagaacttggcacacacaaggcattaaaaaacatttgcattataacaaca  
ccacagttacaggaattattatcttagcttacccttggacatgaccagagggacgcag  
ggagggcataagggggcttaggaaggtgaagaattctgcttctgttgccttcgagggcac  
accagtggtcagggcacgatgccagggccttctgtatgcagccaggtctgtccaaggt  
caggagaagtcactgtgctcttctcctcaatgggcagggcag

>IGR3162a

atcttagcttacccttggacatgaccagagggacgcagggagggcataagggggctta  
ggaaggtgaagaattctgcttctgttgccttcgagggcacaccagtggtcagggcacg  
atgccagggccttctgtatgcagccaggtctgtccaaggtcaggagaagtcactgtctc  
tttctcaatgggcagggcagggctggcaggtccagcagggagcagacacccttgggaatg  
ctgttgggcctgagcctagaataagagggaaggttgggacaagaacaacctcaggctaa  
gggtgaggtcaacctggaggacaatccaggagagtgccagaattgatgtagccctgagt  
ggggaggtgcggtggagctgataggcagcccatattgaggataccttccctgagggcc  
ctgggggctagccagagagctcagctgctgacctcctcctggcctgggtggcctcag  
gtctctaggtagagctgtctccattctggctcagctcctggaggccaagacatctctct  
tcaagggccagccccctctcccagccaagagccttgattccaaggggatctaaagcctt  
gcttgggagttccatcttctggaatgccagtcacagtagtaccactccagggcctc  
agcaaacagccagagagaactttagatgccttcattcag

>IGR3163a

ccattctggctcagctcctggaggccaagacatctctccttcaaggcccagccccctctc  
cccagccaagagcctggattccaaggggatctaaagccttgccttgggagttccatcttcc  
tggaatgccagtcacagtagtaccactccagggcctcagcaaacagccagagagaaac  
tttagatgccttcattcagtgtagctgtctgggtccagctccaccagatgtctgtct  
cttagaagcctgctggtcaaggccaggaactcgaatgggtggagaggaagcagctgtggt  
gggcacagctggatagagggggcagcgtgggtctcctgcagggctagaactgcgccttag  
agtacagggagtttaaggcagggccactgtaggcaggggtcaagggtctgcaaggggta  
gaggcagccacagggcatgggcaccaggaacatccaaagggaaggtctgagacagtacag  
cctgtgaggtgggctgggggctgatgccagcatatcctggaaggacaggactcagtcag  
gaggcaacaaaactggctcctggagccgtggttgggtcagcagaacacaggggagggcg  
tgctgtggcgaagggcggttcccagctctagttttgcccattcaatccctcaacaac

acttattgagtgcctgctctatgtccagcccagacctggt

>IGR3164a

ctgatgcccagcatatcctggaaggacaggactcagtcaggaggcaaaaaactggctct  
ggagccgtggttggttcagcagaacacacaggggagggcgtgcctgtggcaaagggcgtt  
tcccagctctagttttgtgccattcaatccctcaacaaacacttattgagtgcctgctct  
atgtccagcccagacctgggtcaactaaccttggagtgtggtggggattctccaagctgcc  
acacctctctaggggctgagatgctggaggctccagagggggtcagctctctaggatcca  
aacaggggacaaaagctggctctgccaaactgggaccagttactggccctgagccagattcc  
aggggcgacacaagagcagaaccaactctcttcaggaaactgagcctgggggaggtgtgt  
gaccaccacacgctcacacagttcaagtggtaggtctggggtttagaccctgtgttg  
tgctttgtgccatgtgccttggcccagggacagatgtgtctcagctggacctgcagtc  
ccatcagcaccctgtcagacctgctctttctctgttttcacagagaaaaccagctgct  
ctgggaccaacaaaaggggttgccaggcagcagggcggggacaggttacctagctgggc  
ccagagaggccctggccctgaggcctgggtgtagaaaggt

>IGR3165a

tgccccaggacagatgtgtctcagctggacctgcagtcctccatcagcaccctgtcaga  
cctgctctttctctgttttcacagagaaaaccagctgctctgggacccaacaaaggggt  
tgccaggcagcagggcggggacaggtttacctagctgggcccagagaggccctggccctg  
aggcctgggtgtgaaaggtgttgggaggagtggcatctcacacgggtgggggtggggggg  
gtgggagggggaaggcagctgacaggtgggagagccagaggtggctcagcgcagccccag  
caggggaagtgcagaaacaggctgtttgtggtggcagcgaggcccatgtgatggagccttg  
tgcaactggggcctcaggaaaggcagctgcaaaagcatcacagcctcacctctgcctcaa  
ggagacccccatcctttaccctcccacttctcattcaggccagaggattcgggcagcc  
tgccggccatcccttagtctccccagcatcagatgtcccaagtctacctgtagtccata  
aatagaggcccaaccaggtgtcttcaggtttccagttctcctgacagctggagccttc  
ccttagtcttgccttgggtgtctgtgaggagaaggtgctccatttacaatcagctcc  
tccaggcagagcagcagaggggattgcagagcaactgtacc

>IGR3166a

ccccagcatcagatgtcccaagtctacctgtagtccataaatagaggccaaccaggt  
gtcttcaggtttccagtttctcctgacagctggagccttcccttagtcttgctcttggt  
gtctgtgaggagaaggtgcctccatttacaatcagctcctccaggcagagcagcagagg  
gattgcagagcaactgtaccatgtgctcattctacgccctggacctagaatgtcttgcc  
gtggcctgaccatcactgtgcctggacaaaagcaggggtgtaaaaaccttctctcag  
cccagagagagagagacgtgctataaggtgcaggttaaggcttgagcaaaagtgcagggt  
gacaagaaggagacggacatacatgcagcccagaaattcagttactggggctctccagac  
atactctgtcactcatctgtcagctggggcctggactcatggcccagctttagccctgcc  
ccagcgcacacatccacagacactcaaatttagcagtgacctggccaggactgtctggtc  
tctggcctgaggccccctcttcttcttgaccactagaactgacatccagggtactca  
gaaggcaggagaggcccatgtacttccataatttctctccatccttctttttttt  
ttttaatagcagctagaacgagcttggagcactttcata

>IGR3167a

cactcaaatftagcagtgacctggccaggactgtctggctctggcctgaggccctcct  
tctcttcttgaccactagaactgacatccagggtactcagaaggcaggagaggcccatg  
ctacttccatatttcttctcccatcctcttttttttttaatatagcagctagaac  
gagcttggagcacttcatatttctacgttcccaataaaaaaaggaagaaatgtga  
aaatagtgttcaagaattatggcatttgttacttctgcttgtttatttattcatcaga  
tattttgagagcctcctatgtgtcaggcactgttttaggcctcagtgttaaactattaa  
gttttatttatttacttatttatttattgttattatctttaaaaagagacggggt  
ctcactatgttgccagggtggtctcaactcctgggctcaagcaatccaaccacctgg  
cctcccaaatgctgggattacaggcatgagccactgtgccaggccttaagctttataa  
tacatatttaaatggatagcctcatttggaataaacttcaagatttaattccagtct  
tctgtgttctctgtctcaggaggacccccataactcctgatgcccatgatttttctact  
ggtatagattagacctctgtctcttgatcctgaggggtcc

## &gt;IGR3168a

acaggcatgagccactgtgccaggcctaagctttataatacatatttaaagtggatag  
cctcatttggaataacttcaaaagttaaattccagcttctctggtcttcgtctcagg  
agggacccccataactcctgatgcccatgattttctactggatatagattagacctgt  
ctcttgatcctgaggggtctctgggggctgtgattcagattggcagaggtggtgaagctct  
cctcaggagctctggctagcataggcctgtcgctagcctatcctcctgccccatccttc  
tatctcttacgattggccctctccccgcagtgccagctccttttagtactgattggtct  
tgggtgaagtgcctgccccgtggtgcccagcactgcccagtggtagtgcacaggct  
ggcggggactgttcaggctgacctacctccaggcctggccataggacgccagctgtggc  
cactgggtatgagcctggccgcctgtgttgctgggagagtcaggcagagccatgtcgccg  
agtccagtagctgccagctggccgagaggtctgggaatccaggtgcagggggccataggg  
attaaagtcggaagagccagatccaggcctgtgagggtgaagctgggctgaggttgctgg  
agcctcttgagagaatggattggagcagggcccatgagtc

>IGR3169a

gcctgtgttgcctgggagagtcaggcagagccatgtcgcgcagtcagtagctgccagctg  
gccgagaggctcgggaatccaggtgcagggggccatagggattaaagtcggaagagccag  
atccaggccctgtgaggggtgaagctgggctgaggttgctggaggctcttgagagaatggat  
tggagcagggcccatgagtcagcctcatgtcctgggtggctattttcttggtcttaaga  
aaatcaaaattcttctcacttccccctccaagactaggctccatagctgtgtagattcag  
gatcagcagtggtggagttggaggcagagcttcaatgggagtgggactgaaatcctcaca  
ccctgcattctcataccacccgcaatggtaagagcattcacaggacttgagctccag  
caagaggatgcctgatcaaattgtttgccctgtgaaatccatatattaatgggaagat  
aggcttgcttaggaacaacggagtttgcctctcctgcaggagaaaccaggagctctaa  
gagaatgtataatgagaactctatgtgtggagagttaacaagaagctgtctcatccca  
gggaagatgaacagaaaaatggcggatctgggcttgaagtgcacacagtgttgaaaaggc  
cccacctaaaggctctaggaccagcagtccttgagaagtag

>IGR3170a

gagtttgcctctcctgcaggagaaaccaggagctctaagagaatgtataatgagaact  
tctatgtgtggagagttaacaagaagctgtctcatccagggaagatgaacagaaaatg  
gcggatctgggcttgaagtgcacacagtgttggaaaaggccccacctaaggctctaggac

-350-

cagcagtcctgagaagtagctgtgtgtaggattaagacaagctgactcgggagagctgt  
gacattgggcattcaagcatgaagcattgttggcccagagagggtgcacaagcattctcc  
ctcagagaaccatggtgtccagagccagagagagatggagagctccacaatccttg  
aagatctgttaccctaacaccaatatatcccccttaagaaaatgggtggccccctgtaaat  
tgtcaatatagcaaattggctcccataatatattgaaacactattaccaccttggggatt  
cttttcaaattacaagcttgatttaataataaaacgtaattgattaatacattagattaaa  
agaagaaggaatcttgaattatctcaaaaggcattgacaaaattcatcagccattcac  
acgataaaagttagaaaaccatgaagagaggaaatgttcttcacattttaagaacagat  
ataaaaaaccaaagccagcattagatttaacagtctaga

>IGR3171a

gatttaataataaaacgtaattgattaatacattagattaaaagaagaaggaatctttaa  
ttatctcaaaaggcattgacaaaattcatcagccattcacacgataaaagttagaaaacc  
atgaagagaggaaatgttcttcacattttaagaacagatataaaaaaccaaagccagc  
attagatttaacagctctagaaagttctattaatgggagaatccaatgtcctcttactac  
tgttgttcagtggtgctctggaagtcctaacaggacaatagggtgaaaagaagaataa  
gggagaagtaaaggaagtaagtaataagagcctcaaatgatcattattgcagatattatga  
tttctcttcataatatcaagagaatcaattgaaaatgattatgaccagtagggagaat  
ccagtaggagggagcagagtagaataaattaatatgtatatagattttaatagctttt  
aagagtgtcaagtcacaactgattggaaaatgtgatgaaaacaattaccattcacgata  
atggtgaaacattaaaaatatctataaatgaattttgagtacatcaaaagcctataaact  
ctttctttttatttcttttcttatactagtgggtggtgagaacanagggcctatgaa  
ctttagatctatgatataatttaaaagaagacaanangtgtg

>IGR3172a

gattggaaaatgtgatgaaaacaatttaccattcacgataatggtgaaacattaaaaata  
tctataaatgaattttgagtacatcaaaagcctataaactctttctttttatttctt  
tttcttatactagtgggtggtgagaacanagggcctatgaactttgatctatgatataatt  
aaaagaagacaanangtgtgcacgcgtatgtcatgtgtctataaaaatcantatttttaa  
tttattagtaaatcaatgcaattccaacaaaattgtgtgggggggaggaattgacaa  
gatgattctaaggatcaactgaaaagtaagtatgaaaaaacccacaaatattggattaa  
gagactaataaagtaagattgccctataagaaagtatgcaatagagctaaaataattaa  
gaatgtgatagcagcataggaaaagacgaatatgttagtggaacaaaagagagtcctatag  
catgagataaaagaaaacattttaattcaggaataaaaggtagtttactcaataaactcat  
gttggggccatttactattatgcataaaaaataaggctataattctatatgctatataat  
ttccacattataaagtaaatcccaatggattcatgatctatataattttaattttcca  
atgtgaatgctttataaactactcatatgctttaccaga

>IGR3173a

ttattcaggaataaaaggtagtttactcaataactcatgttggggccatttactatta  
tgcataaaaaataaggctataattctatatgctatataattcccacattataaagtaaa  
tcccaaatggattcatgatctatatattttaatttcccaatgtgaatgctttataaac  
tactcatatgctttaccagaaatgactggtaaaaaatatatagattaatattttataa  
tcatggtgctacgggttgaaatgtgtccccagagttcatgtgtggaacttaacttaca  
atgcaacagtggtgagaggtgggctcttacgaggtgataaggtcatgagggtctgcccc

gagcagtcctgagaagtagctgtgtgtaggattaagacaagctgactcgggagagctgt  
gacattgggcattcaagcatgaagcattgttggcccagagagggtgcacaagcattctcc  
ctcagagaaccatggtgtccagagccagagagagatggagagctccacaatccttg  
aagatctgttaccctaacaccaatatatcccccttaagaaaatgggtggccccctgtaaat  
tgtcaatatagcaaattggctcccataatatattgaaacactattaccaccttggggatt  
cttttcaaattacaagcttgatttaataataaaacgtaattgattaatacattagattaaa  
agaagaaggaatcttgaattatctcaaaaggcattgacaaaattcatcagccattcac  
acgataaaagttagaaaaccatgaagagaggaaatgttcttcacattttaagaacagat  
ataaaaaaccaaagccagcattagatttaacagtctaga

caatggattaatgccaacagaggtgggtttgttattgtgggaatgtgtccttgaagga  
ggagctcggtcccccttctctctcaccctctagccttctgccatggaataatgcagc  
aagaaggcccttgaaagatgctggcacctgatattggacttctcagctccagaat  
gagaaataaattctttcttataaattactcagctattggattctgttataagtaact  
tgaagcagactaagacttgaggtgagaaacatctcttctgaagataaatactgaaat  
atgtttcctgttacatatagatttcaaaaatcagagaaa

>IGR3174a

ctggcacctgatattggacttctcagctccagaatgttgagaaataaattctttct  
ttataaattactcagctattggattctgttataagtaactgaagcagactaagactga  
ggtagagaaacatctcttctgtgaagataaatactgaaatatgtttcctgttacatata  
gatttcaaaaatcagagaaatatgctgcaaacctgttggtagttttgtttcggggatgg  
tattttgggacattacttttctgagttatatattgtacagtgtttaatttcata  
aataaatttactgtttgaattagaaaaatgaagataaaaaaggaaaataaagacaa  
cagaaggacaaatactgcttctatgaagaaccttacaataatacactccatttactt  
ctccctctttttgtctaatgttgtgtgcgtttacctctgtattgtctataaactccat  
aataaatactcattttttgtttaaacagtcaactgtcttttaagtaatttaaaaaac  
aagaaaacctattttctatttactgttaggttactggttagcactgttctttgttta  
gagctgaattccaacaggtatcaatgagccacctcagcagagaaatggcttatttcct  
tcagccttaagaacttcttttaggccatgtgcggtggctc

>IGR3175a

gctttaaacagtcaactgtcttttaagtaatttaaaaaacaagaaaacctattttctatt  
tacttgttaggttactggttagcactgttctttgtttagagctgaattccaacaggt  
atcaatgagccacctcagcagagaaatggcttatttccttcagccttaagaacttctt  
taggccatgtgcggtggctcatgcctgaattctagcactttgggaagccgagacagacg  
gattgcctgagctcaggaggtccagaccagcctaggcaacaacagtgaaacctgtctct  
actaaaatacaaaaaattagccgggcatgggtggcgtgcgctgtagccccagctactcag  
gtggctgaggcaagagaatcgttgaaccaggaggcagaggtgcagtgagctgagatc  
gcaccactgcactccagcctaggaacagagtgaactccgtctctggaaaaaaaaaaaa  
gaaagaaaaaaaaagaacttcttaacatttccggtagtacagacggactggtgatgaat  
tctgtcagcatttttaagatcccgaagtattttatttttattccccacctgtccc  
ccaacctttttttttttttttttttttggagacagagccttgccttatccccag  
gctggagtgcagtggcacgatcttggctcactacaacctc

>IGR3176a

ctttaacatttccggtagtacagacggactggtgatgaattctgtcagcattttttaag  
atcccgaagtattttatttttattccccacctgtccccaacctttttttttttt  
ttttttttttggagacagagccttgccttatccccaggctggagtgcagtggcacga  
tcttggctcactacaacctctgactcccaggttcaggtgatttcatgcctcagcctccc  
tagtagctgggattacagacacctgccaccacgccagctaattttgtatttttagtag  
agacggggttttgcattgttggccagacttgcctggaactcctgacctcagctgttccat  
ccgctcaggctcccaaagggtgagattacaggtgtgagccaccgtgccagcctctca  
ttccccctttaagataacttctctggatataagaatactaggttgccttttttctcata  
gattatttaataatataataatcctataattttattgtttctgtctgcattact

cctggtaagaaataaatggtgattctaactgtgttcccttatgtaatgtgcctatatt  
ctttatcacttctaagatgttctatttggtttaagatttgactatgatgttcctaga  
tgtagttccctgtttttatcttcttggagttttaaacc

>IGR3177a

ataatcctataattttattgtttctgtcttgcattactcctggtaagaaataaatggt  
gattctaactgtgttcccttatgtaatgtgcctatattctttatcacttctaagatg  
ttctatttggtttaagatttgactatgatgttcctagatgtagttccctgtttttat  
cttcttggagttttaaaccagcttctgggatggtgtattaataatttttaaate  
aaatatagaatttcatttaccatttaaagaatttttggcccaatctcttctcccc  
ttccttctgggactccaattttatgtatatattgattacatgatactgttcaaggct  
acttgttgaggctgtgtttgtattttcagctctttacttttagatgtttccatagt  
cttgactcaagttcattgatctttcattttagcatccagcttactcataagtttacc  
tagtacattttccattttgtatattgtattttcaattctagaattttcattcagctcct  
ttttatagtttctatttctctgctgagatagctcatctgttctattattctctatct  
tglaatttaaacttcttaacatatattataatagctatttaaagtcctcatctgctagt  
ccaatatctgtgttacctctggatctatttctgttgatta

>IGR3178a

atattgtattttcaattctagaattttcattcagctcctttttatagtttctatttct  
ctgctgagatagctcatctgttctatttattctctatcttgaatttaaacttcttaa  
catatttataatagctatttaaagtcctcatctgctagtccaatatctgtttacctct  
ggatctatttctgttgattatttttgcctgggtatgaatcataatttctgcttcttc  
atatgttttagtaattgttgactgtatattaggaattgtgaatactcattgttaagagtt  
tggatcatgtttaaagagtggttgagttgttttattagatagtaaattcactagaggctc  
aatttgagcctgaggcttgggttttaggcttattatggcaggcttaagatactgcgtatt  
acaggcacagagtagccctattcttaaagcgtggacttcttgggtttcattgagtgct  
cagggtgtcaacaaagtctttcaccttgttgatcagaacagatctcagaatcatgagc  
cctctagaatccccacttagttcttagaccagagaagttttttgtgtgtttttgtt  
tgtttgtttgtttgtttgttttaatccactaggccttatggaatcttgctctgcat  
gtgaggcttagacaaagcctcaggagcacctctgtatagc

>IGR3179a

tttcacctgttgatcagaacagatctcagaatcatgagccctctagaatccccacttag  
ttcttagaccagagaagttttttgtgtgtttttgtttgtttgtttgtttgtttgtt  
gttttaatccactaggccttatggaatcttgctctgcatgtgaggcttagacaaagcct  
caggagcacctctgtatagctttccagagctccttcttgttagctccttcttcttga  
taccttatccacaaatttcagccacctcagcgtctgctatctatgatctttgtctcctt  
cacatgatgagaccattgttctctctctctctctcttggagacagggtctcactctg  
ttgccaggctggaatgcagtggcacgattatggctcactgcagcctcaacctcctggcc  
tcaagtgatccttctgcctaagcctctggagtaactggtactacaagtgtgcaccacaat  
gcctggctaatttttaactttttagagacagggtattgctatgttggccaagctggct  
tcaaacctctggcctcaagggtacctccacctcagcctcccaagtgctaggattacag  
acatgagccactgtgcctgggtgccattgctttctgggcaccacttcttatgccatgggt  
tggaaagtatcctaggaagcactttccctttgtttcc

## &gt;IGR3180a

ttttagagacagggtattgctatgttgcccaagctggtctcaaactcctggcctcaagg  
gactctccacctcagcctccaaagtgtaggattacagacatgagccactgtgcctgg  
tgccattgctttctgggcaccacttctatgcatggtttgaaagtatcctaggcaaa  
gcactttccctttgtttcccttctctcaaggacaaaggctatttgatgtcaatgccta  
taatcactggctataaatatttcgagttttatggttggttacagtggggagggaagtta  
ttaccaacttatcagttatggttggaacctaaggaaagttgaaaactaaaagaagaag  
aaaaggaaaagaaaataggacccttaattcaagatgtggatctgatgtcataatgtct  
aagagtctgagcttcactctcaagcagctgggccagttgagcataccctgctgtagtct  
ttctaacctggcatcagaattggactgaataaatgtacagttctggccactatagcagg  
ttgtgtcagacttatccttctgctgaaaacaactataaaagttggacaaaatgtataaaa  
caactatttgaaggcatttgagaacaaccaatacagctaagaattgaggagttgtgatcc  
tggagaaaagggaataatgtgtagtgtgagttccacatttac

## &gt;IGR3181a

tggactgaataaatgtacagttctggccactatagcaggttgtgtcagacttatccttc  
tgctgaaaacaactataaaagtggacaaaaatgtataaaacaactattgaaggcattg  
agaacaaccaatacagctaagaattgaggagttgtatcctggagaaaagggaataatgt  
gtagtgtgagttccacatttacctttgcttttccctaggggcatttcacacattgttactt  
gagggaatagggaccaggcagaaagcatcagttaccagactgaggatacaaaggctcag  
agttcagggtgcccgaagaagatggaaatgaagaaggaaaattccagaaggtaggaaaga  
agagagaaggagcccaataatgcatgcaaattcctccaactttattggctttttttga  
gacagggtcttgccttgttgccaggctggagtgtagtggtgtgatcttggctcactgca  
gcctccctcaacctcctggattcaagccatcctccacgtcagcctcccaagtagctggg  
actacaggcacatgcaatcatgcctggctgactttgcttattttttgtggagatgaggt  
ctcactatgttgccaggctgggcttgaactcctgggctcaagcaatactccagcctggg  
tctcctaaagtgttgggattacaggcatgaatcccatgc

## &gt;IGR3182a

ttcaagccatcctccacgtcagcctcccaagtagctgggactacaggcacatgcaatca  
tgcttggtgactttgcttattttttgtggagatgaggtctcactatgttgccaggct  
gggcttgaactcctgggctcaagcaatactccagcctgggtctcctaaagtgtgggatt  
acaggcatgaatcaccatgccaccctattggcctacttttagcctatcaggctaaagaa  
ctgagcaaatgttagtgctttaaagtgttggggagacaaattggaattcaacttctatc  
aaggtagagaggccttggtaaatgcgtaggtgttctgctaagtcagagggtcacaca  
ctaggagagagggtcacatcctaggaataagagatatgtcctaggacaaaaagaaccac  
accagccaaacctgacataaaccaaagccttgacaggagtaggggtatttttgggtact  
ctgcttccagaagtcaacttaattctcttcttggatgaatacaacatcaccagaga  
ctttccaacttttcatccaaatgtgtgtcatctaatagagaagtatgagacatgctaaa  
aaacaaaaaaaacncaacaaaaaaacagggccaaatgactaaaaatcaagagaaaagg  
cagacaatggaaatagaccacaggtgttcagaaatgag

## &gt;IGR3183a

taattctctcttctggatgaataacaacatcaccagagactttccaacttttcatcaa  
aatgtgtgtcatctaatagagaagtatgagacatgctaaaaacaaaacaaaacncaaac

aaaaaacagggccaaatgactaaaaatcaagagaaaaggcagacaatggaaatagacc  
acagggtgttcagaaatgagagacttccaataattatgatgaaatgtcaagaaatag  
agggaaagtataaaaaaaagatgaaaagctagagaatttaatatagaattgccag  
aatactgataaagatagcagataggaggcaggactagctgcagctcctgctcagacaa  
cagagcagtgtgtggagactcacatcctgaacttttgcctcaagaactactgcaggaaca  
taccaggaaaagccaagagaatccacagacccttgaaggaactggatcactactgcaggc  
tcctcgagatgcaaaaaactgtgagctgcatgtttctcagcaggagggtcatggc  
tgggacaagttctcagccctgggactggctacctggaatagactcagtactgtgtgg  
ggccatggtgggagtgaattggccttaggactgtgggtgcacaggagcagggtgagg  
cctgtgactgccagctttctccacttccctggcaaacct

>IGR3184a

tgtgagctgcatgtttctcagcaggagggtcatggcttgggacaagttctcagccct  
gggactggctacctggaatagactcagtactgttggggccatggtgggagtgaat  
tggccttaggactgtgggtgcacaggagcagggtgaggcctgtgactgccagctttct  
cccacttccctggcaaacctgtatgactcagcagaggcagccacaatcccccgaggat  
ataactccatcggactgggaacaacaccctatccccacagcagctgcagcaagccctg  
gcaaaagagaggctgagctctgaaatgcataatccctgccccacctgatggtctttct  
accacccctgtagcacaagacaaggctcataatcttgggagctctatggccctgcc  
accgtcttaaccagggtgtccctaggggcaatttgcattctccttataggactgcagcaga  
tgtgctctgaaagcaccacctcctgcatggaggccaaccaacacaaaaccaagtaccct  
cacagagtccatttctacccctgctacctccacaggagcagggtgctggtatccatggct  
gcaatacctgaagatggatcatatcacaggactctgcagacactccccagtagccctg  
tagccagtagctcagctaggtggctagaccagaagagc

>IGR3185a

ctcctgcatggaggccaaccaacacaaaaccaagtaccctcacagagtccatttactcc  
cctgctacctccacaggagcagggtgctggtatccatggctgcaatacctgaagatggatc  
atatcacaggactctgcagacactccccagtagccagcctgtagccagtagctcagctag  
gtggctagaccagaagagcaaaaacaatctctacagttcagctctcaggaagccccatt  
cctagggggaaggggagaacaccacatcaagggaacaccccatgggacaaaataatctaa  
acaacagccctgaattccagacctgcctctgacatagctacctaataagagaagaac  
cagaaaaaattccagtaatatgacaaaacaagggtcttaacacccccaaaagatcat  
accagctcaccagcaatggatccaaccaagacaaaatctctgaattgccagaaaaagaa  
ttcagaaggtcgattattaaattaatcaaggagggtaccagagaaaagtgaagtcctactt  
aaataaatcaaaaacatgatacaggatttgaaaggaatagtgtaaatagggatgtagca  
gttcttcttgaatgtctgataagaattccacagtgaatccacctggctcatggatttttg  
ttgttgggcaattttttttttttttttaagag

>IGR3186a

attaatcaaggaggtaccagagaaaagtgaagtcctacttaataaatcaaaaacatgat  
acaggatttgaaaggaatagtgtaaatagggatgtagcagttcttcttgatgtctga  
tagaattccacagtgaatccacctggctcatggattttgtgttggcaatttttt  
tttttttttttaagagatggagctcgtctgtcaccaggctggagtgcagtgggt  
atgacctggctcgtgcaacctccgctccaggtcaagcaattctcctgcctcagcc



tcccgagtagctgggactatagggcccccaccatgcccagcgaattctttgtattt  
tagtagagacgggggttcaccatgttggccaggctggctcgaactcctgagctcaggca  
atccgccacccttggttcccaaagtgttaggattatagggctgagccaccgtgcccagc  
cagcaattttaaaattaccatttaaatctactgcttgttatcggtctgttgagagatt  
ctatatcttctagtttaacttagggggtgtatattccaggaacttaaccatctcct  
ctagggtttctagtttatgcatgtaaggcttcatagtagcctgaataatctttgtat  
ttctgtggtattgaagtggcttcattgtctggggaaatac

>IGR3187a

atttaaatctactgcttgttatcggtctgttgagagattctatatcttctagttta  
ctaggagggtgtatattccaggaacttaaccatctccttaggtttctagtttatgc  
atgtaaggcttctcatagtagcctgaataatctttgtattctgtggtattgaagtggc  
ttcattgtctggggaaataccctaggttcgtctgactgagaagattaacaacacagac  
acacacacgtgaagcagggttaaggagggaagttaatagacaaaaagaagagagagt  
gagctttctacacagggcaggtgggatgcgatccattttatagagaggcttgaggaggc  
gggtgttgattacacaggggccagggttggttgaccagggtgaaatggttacatag  
cccgagaagaaattggccatcccacctaattctttattatgtaaattgacctctacct  
gtccgggtgccattgaaccttgattcctcattgtaccacataaaattaattaaagatg  
gatcatagactgaactatgaaacaatcaagctttaaaggaaaccatggaagcatagttt  
catgaccttgggtagggaacatttctaaatgggacatagaagcactagccaaaata  
taaaagattaatatgttgatttgaagaattaagaactt

>IGR3188a

tgattcctcattgtaccacataaaattaattaaagatggatcatagactgaactatga  
aacaatcaagcttctaaggaaaccatggaagcatagtttcatgacctctgggtaggga  
acatttctaaatgggacatagaaagcactagccaaaatataaaagattaatatgttga  
tttgaagaattaagaactttatttatcaaaagatcctattaggagaatgaacaagcca  
aagcacagattgagagggaatattgcaatacatatatccaacaacaaactcatatggag  
aaaatatatagacttctacaattcagtgaggaaaatgcagaaatcccaataggaaaatgg  
acaaggacttgaacagtcatgtcacaagaataactaataaacacctaataaagatgctca  
atataccagggaatgttcttttaattgcaatgagatattgctacacaccaccaaaa  
tgactgaaattggaaaagctaacaataacaaatgttgacaaagatatgaagcaactggaa  
ctctcattcattgccattgggaatgtaattttgttcatttagaaaaatggtaatat  
ctacaatagctcaatatatgcatgtcttatgacctagggttctcctgattttat  
tatatttaataagtgttggccaccaaaagacatgtg

>IGR3189a

aacaatacaaatgttgacaaagatatgaagcaactggaactctcattcattgccattgg  
gaatgtaattttgttcatttagaaaaatgtaatatctacaatagctcaatatatg  
catgtcttatgacctagggttctcctggattttattatatttaataagtgttg  
tgccaccaaaaagacatgtgcaacatatacaaaacagttttatttaacatgactaaaa  
caaccaatgttcatacaaaaaatggataaattgtgttatattcaacaatggaatacc  
acatagcaatgaaaaagaatgaggaactattacaacaagatagatggatatcacaacca  
taatgtggagtataagaagccgacccgaaagaatatattgtataacttcactttata  
aagttcaaatctgacaaaactaatcaaaagtgaacaaagaaaaaatagtgttaacttt

gggagagtttactgactatgaaaaggtacatggaagccctctggtattctggaaatagtc  
tatattttatgtgggaggttaattatgtgaatttatatgaagcaaacacattgagctg  
tatattcagacatgttagttactgtatgtaactgtatcttaataagtaagttttaa  
acaaaagcacactggctgcccatgcctctctaccctgct

>IGR3190a

aaaaggtacatggaagccctctggtattctggaaatagtcctatattttatgtgggaggt  
aattatgtgaatttatatgaagcaaacacattgagctgtatattcagacatgttagt  
ttactgtatgtaactgtatcttaataagtaagttttaaacaagcacactggctgcc  
catgcctctctaccctgctagtggggattcgtgaggcccgagaggagataactattaa  
tagctttccagtgtatagaagatgggctcatattcgcaccctagtttatggagcagggc  
ataccaattgcaggtcacacatggaaccattcatgcattccttcttctctctgcat  
gccactattggttcccaaatcaagagggtccagggtgacctgtgtgttggccttg  
ggggcttgtgacaataaactgggagatgcattagtgtgctaaggctgccataacaaat  
atcacagcctgagtggttaacaatagaaattcattttctcatagttctggaggccgga  
agttcaagattaaggtgtcatcagggtgggttctgtgaggcctcttcttggcctgt  
agatagatggccaccttctgtcatgtctcacatggcctcatcttgtgcaaatgtgga  
gagatacaactcttctgtcttcttcttcttacaaggac

>IGR3191a

aacaatagaaattcattttctcatagttctggaggccggaagttcaagattaaggtgtca  
tcagggtgggttctgtgaggcctcttcttggcctgtagatagatggccaccttct  
gctatgtctcatatggcctcatcttctgtgcaaatgtggagagatacaactcttctgt  
cttctcttcttacaaggacaccagtcctattcaagtaagttccacctgcgacctca  
cttagcctttatcagctttattaaccttttataggtcttatctccaatgcagtcacat  
ttaggtaagggttcaacatataaatttgaggctatgcaattcaatccacagaaggagc  
tgatttacttttacacctatgcaatttggccccctccacctactgatctcagagcat  
ttctgggggtcacctcagtggttctgcaacaatcctctgcctctgagccagactgaca  
gctctgccctgccaccattgctacttctgctgtccatggctctgggaggcctctgctct  
gctggaagtatcatctgtgttctgaccactggggagagatgctgttactgttgatacc  
cccagcccagtcctaatggtggtgggtgtatactctctcattaggcacttcccttact  
tcctaaacacagcaaggcccagagaggatgaggccctgc

>IGR3192a

gctacttctgctgtccatggctctgggaggcctctgctctgctggaagtatcatctgtgt  
ttgtcaccactggggagagatgctgtttactgttgataccccagcccagtcctaatggt  
gggtgggtgtatactctctcattaggcacttccctctacttctaaacacagaaggccc  
agagagggtgagggcctgcctggccaccgtaggctctccgtgggaatgagccattccctc  
tcccaggcttctgctcattctatctctctgtgcaataaccatttcccagacctccaaca  
cttccccctggctgactatgcaggagacccacacctatcttcttctgacctcggc  
aagtgagtcctcccttctgtatgtctccctcagcctctgcgattcaccgtcaatttctca  
tctgtgcttctctccccataaaacaaaacaaaacaaaacaaaacaaaacaaat  
gagctccatgcaggcagggtgttttctgactcatctctgtgtccctgggtaccaggac  
tggacacaagggtggtgtcagggtgtgtgtgactgactgaatgtgagtaagtgggg  
tgtagagggttctgaagccctaggctgagtgaccaagtatggaaccctgcttgccaca

cttcagcatgaccaaggcagctggctcttctccttcaaagg

>IGR3193a

gtttttctgactcatctctgtgtccctgggtacccaggactggacacaagggaggtgtca  
ggggatgtctgttgactgactgaatgtgagtaagtgagggtgtagagggttctgaagcc  
ctaggctgagtgaccaagtatggaaacctgcttggcacacttcagcatgaccaaggcag  
ctggtcttctccttcaaaggcagtgctgaggcttgacaggctatagagccaggccttcat  
gtctaggetgcagacagcttctcaaagtccatctccttctcctactgatcttttctg  
ctactccccattggtgaaccaaccagaagctgcagggcaggtgaacctgttgatgcta  
tccatataggtcagcagtcagggcgagagcaggggaaaggagacaggagaggagatc  
tggaagggtaaagcagatgacatctgtcaagtgttaggtaacacttggtacaggagagt  
ctccataaattagttgtccaatcacagaagcatcccagagcatcatagaaccagatga  
ggactgccatcctgcttctctggctcttctcctcaggagctccttccacagagccag  
gatattctgggtatgttcagagttcaaggtctcccatctccttcttaacttactgca  
ttactagtcttgggtgttctttagggctactggctccta

>IGR3194a

atcacagaagcatcccagagcatcatagaaccagatgaggactgccatcctgcttct  
ctggtcttctcctccaggagctccttccacagagccaggatattctgggtatgttcag  
agttcaaggtctccccatctccttcttaacttactgcattactagtcttgggtgttc  
cttagggctactggctcctatggcctgaggcttccacagcctgaggcttccaaggctac  
aagtaacttagctgacctgaaggccctgatcactatgggctgaggaaaggatctggg  
gtcttccaatatctccttgcctcctcagccagtggagggtcccagcattggagtcattc  
cccagggcctggaaaacatctctccttcccgttgcctatgattatgcaggcctagtcac  
aggctcagctaaaccttggcaggttgaaggatggggcaccagtgagggggctttttg  
agcaaggctggggctgctcctttgagtggccctgttgagctccatgcacctctgggtg  
ccaacctcattttgcaactacagctctggacaagaaggagcagctcccctaaaaagat  
tctccagaaggcctcacacaccttgccttgggacaaaaatagctgttggtgcccagg  
agagagtgcagagaaaattccagaacttgatgagggcagg

>IGR3195a

tttgagtgagccctgttgagctccatgcacctctgggtggccaacctcattttgcaact  
acagctctggacaagaaggaaagcagctcccctaaaaagattctccagaaggcctcacac  
acctttgccctgggacaaaaatagctgttgggtgcccaggagagagtgcagagaaaattc  
cagaacttgatgaggggcagggtgtcaacctggcctacagctgttgggtgaccactggtgt  
caacctggcctacagctgttgggtgaccactggggtgagagggcagtttgcctccaaa  
attgcagccaccaatgacagcatctaacgacccagccagtttgaggaaagccatcttcca  
ccttcaccaccttgatcattcactctcagccaagaagatgtactgtccaagccatccct  
tctccatgggctctgatttctacagatgatagaggtagacatcttctgattccaagtc  
tgcaactagctggttcagggtcagagtaagtaataaggccagagcctggtccaaagtcaa  
talcaggctctggttcagagtcagattaagggcagagccagaggacaaaggacagaacc  
tctccttctcatgtgaaaggccagatccacacgcttgcgtatgcatgtgaatccctctg  
tgcgtgagcatataaatgtgtgtgtgtgtgcgtatgtg

>IGR3196a

tcagagtaagtaataaggccagagcctggtccaaagtcaatatcaggctctggttcagag  
tcaagattaagggcagagccagaggacaaaggacagaacctctcttctcatgtgaag  
gccagatccacacgcttgcgatgcatgtgaatccctctgtgctgagcatataaatgtg  
tgtgtgtgtgtgctgtatgtgtgtgtgtttgtgggtgagagccctcttactagaggctatg  
gccaagtgtctctgttttcaggcactagaagctcagggattatcaagcttctcacaggt  
ttatgc aaatgtttgaaacatgaaaaaataatagaaagctataaaaaatgtaataactaa  
atatagtaaatgttaacagtatgtcatagtcatagtcaactgaagttcagccatgttctt  
gtgtgggtcaagttaaaaatgtatttatgtgggatgtgggtgtgtggaatagggttgatgt  
ggaatgaggttagtcaggaccttggaggaatgagtgccctggcctcttgtgtgggtaa  
gagtgccagggcagtgtagtgcaggggccacaaggcagggtgactagcaagttcaaatgc  
tggtgtctactgaagggaaggggagatcagagctgcaactggagctgacactagcagggc  
agttgagggcaggaagaggccacaggagggttaggggtc

>IGR3197a

tttggagggaatgagtgccctggcctccttgtggtgggtaagagtgccaggggcagtgact  
gcagggccacaaggcagggtgtagtagcaagtccaatgctggtgtctactgaagggaag  
gggagatcagagctgcaactggagctgacactagcaggggcagttgagggcaggaaagagg  
ccacaggaggggttagggctccttgagacaggagtgagcaggcctcagccacaccagtgat  
tcaggccttttgtgattatgtggtagcagactgggattagggttagccactgacagctcat  
gtggtgatttttttttttttttttgagacggagctctgtcttgccaccaggctggaac  
gcagtgtcgtgatcttggctcactgcaggttctgcctcctgggttcaagcgattcttctg  
cctcagcctcccagcagctgggactacaggcatgcaccaccatgccacctaatttttg  
tatttttagtagagatgaggttccgcatgttggccaggctggtctcggtcttgaactcc  
tgacctcatgatccaccaccttggcctccaaagtgtggaattacagctgtgagccat  
cgcgtctggccaatttttttttaattagcaaaagatactcccttttcaattcacttta  
ttccatctactgaaaacttattgtaatgactatgcacat

## &gt;IGR3198a

tttcgccatgttggccaggtcggtctcggtcttgaactcctgacctcatgatccaccac  
cttggcctcccaaagtgtctgaattacagctgtgagccatcgctctggccaattttt  
tttaattagcaaaagatactcccttttcaattcactttatttccatctactgaaaactt  
attgtaatgactatgcacatctatgatggctgccatgtaaatggagacatcattgtgcag  
tgcaccaattgagcaatgtttgattgggctaggatcactcatggatagattcatggacac  
cagtcctgtcctgaaaggatataaagggtgccttacaacaagtttcattatagcaaaagt  
aagtacattcattaaaaatagagagaggcagcctgggcaacatggcgagacctcgtctc  
tataaaaaataataaaaaattggccacgtgtggtagcgtgtacctgtggtcccaccagag  
aggctgaggttaggaagattgcttgagcctgggagggtgaggctgcagtgagcctctgaac  
tccagcctgtgtctgtacactgcacttcagcctggagagagtgagacccccaaaaaaaag  
tgagtctcaaaaaaaaagtgagtgagtctcaaaaaaaaagaaagaaagaaaaagg  
agaggaagggtggcaccaggagagtttgtgctgaaactgt

## &gt;IGR3199a

cttgagcctgggagggtgaggctgcagtgagcctctgaactccagcctgtgttcgtacac  
tgcacttcagcctggagagagtgcacccaaaaaaaaaagtgcgtctcaaaaaaaaaagtgc  
agtgcgtctcaaaaaaaaaaaaaaaaaaagaagaaagaaaaaggagaggaagggtggccaccagg

&gt;IGR3200a

&gt;IGR3201a

&gt;IGR3202a

tagctaactcctgccctctggacatttgcactagtccagagcctctcgcccaggatggag  
gtgaagtgaggaggaaagttgtagttaaactcactctttacaccatggggggcctgcc  
tggacttgctgtgaattgcagttcctgaaggctcttggcatgcctgtaatgacaactcag  
cctgattgctgactctgcttgtcttgggttgcaggggtccatgggggaggcaaatggtag  
gagagttgtagcctgcttggttttgcccaccagatgggttcagggttaggggggc  
actcttagggacacacttggctcctgccagcctgtccccacaggcttctggggattctg

ccagattatctttccctttccagggtaaccaccaggetataagaccagactactggat  
aggccctatttcagaagcagtagggctactactaggtagccccactcaagccacaagtct  
tgctgtctgtgttggccttgagtaaaagcggcagccaactgagacacactcggtctttc  
ctcagctcttaaggggagaaaacctagggtagggtagctccagtgagacagctgcatgcgg  
aatgtaccgaagaatacagatgtgtatccacatatacaatgccctctgtgtggcattggg  
tgaacctgagggccttgctctgggaaattccatggaaggc

>IGR3203a

gagtaaaagcggcagccaactgagacacactcggtctttcctcagctcttaaggggagaa  
acctagggtagggtagctccagtgagacagctgcatgcggaatgtaccgaagaatacaga  
tgtgtatccacatatacaatgccctctgtgtggcattgggtgaacctgagggccttgctc  
tgggaaattccatggaaggccagatagtcgtaaaccctgaccacacctccagctgctgca  
gtggttcaggggcctgcaagagtcacagcattcaggagagacttcagtccaagcagtg  
agcttccccactccccctccccaaaaacaggatcacagtgagtaggagtgaggaggc  
tggggcagggcagggtagtagggccccctgttagagttaagggtatgccacatccacc  
tcctattcatcaatttcctgtccgccagcacagatgttttactatccctctgggga  
aacaccaggttcttctcctggggtagggatggcaggcagacaagtccagactgcttaag  
gagccattggccagggatattgcctagggacagcatggaggtagagcctcatttggaat  
gccctggccatgctggggtagaaggtagcctatggccatgcctgatctgagcctaggaagg  
tctctaagactgggtctaggtaggcagctacccctactag

>IGR3204a

gggtggggatggcaggcagacaagtccagactgcttaaggagccattggccagggat  
tgcctagggacagcatggaggtagagcctcatttggaatgccctggccatgctggggg  
aaaggtcataggccatgcctgatcttgagcctaggaagggtcttaagactgggtctagg  
taggcagctacccctactagtagcctttccagctggaaaggcttgggctttccctccc  
tagacaaaagtgtgctgggcgggctctgcttatctactagttttatactagacagagccc  
ctttgatatgtgtgctccctgaatccccgccttgacctcaactggtgatcagcaaatgt  
ttgttagtgaacacataaatgaacaccatagagctgtccagaaggaggtatggcctt  
gttcatacaatggatttggggagaaggatgtgaatctctataacatgctgtgatgtg  
gctgttaaagatgggttggtgattcattaaagtacacacactgggtgtactcaatgaggtc  
tgctagaggccacaatagtgggaatgtccactcattcattcatgtattttgttcacaa  
ttcctctctaggctctgggcgccagaccctatgctagagctggagacacagtgatgaaca  
ggtagaggcagctcccaggaggccaaatggtaaatgaa

>IGR3205a

attcattaagtacacacactgggtgtactcaatgaggtctgctagaggccacaatagt  
ggaatgtccactcattcattcatgtattttgttcaccaattcctctctaggctctgggc  
gccagaccctatgctagagctggagacacagtgatgaacagggttagaggcagctcccagg  
agggccaaatggtaaatgaagtagacattgaatgaggtcaggtagcatgtgtgaaactca  
tccatgaggagctttggggcctatggcaggatctggctcaggctagaccagaaagcctt  
ttgaaagaaccaccttttgggaagagaatgttctaggcaggaggaataacacattcaaa  
ggccagggaactgaaaagtgcctggagtggctgcagcatcaagtttgaggctgtgcataa  
gaagagagaccatcagggtctggataaaagggttggcagcattggcaagatttgttcta  
cccttgggtccatggaatacctttgagaggttctatacggaaataacatgatgggaatca

catggttacaatgtcactctgcctgtgtaatggagtaaggatagagggagcggagtaga  
aaagtgggctaagatggattgtccaagtgagagatgggtgtcctgaatttggtctgcg  
acagcagggttgggaagaagtaagtgaactgagagagatc

>IGR3206a

ctttagagaggttctatacggaaataacatgatgggaatcacatggttacaatgtcactct  
gccctgtgtaatggagtaaggatagagggagcggagtagaaaagtgggctaagatggatt  
gtccaagtgagagatgggtgtcctgaatttggtctgcgacagcagggttgggaagaag  
taagtgaactgagagagatccaccaggtgaagatctccagggtgggcatgcagtgggaaag  
aaaagggaagtgactgggagatgggtgatatttgctgagatgtaggaaatgctggggcaga  
agcagtttgggtgggtgtgggtgtgggtatgggggagatgttcatcctggctgaacctgc  
agctggagatgccccaaaagcagtggcaggggggtccccatacgggactacccaaacca  
tcctgaaatggttgggattccaagaaagtagcactaaatgccagggtgatcagtccaaa  
gcatttattagggaatttctcgtctctgagggggctgcagtacatcctgtaggcagac  
agcgagacagggatgttctatctaggtatgcctgctgaaggggggtctgggtatggaat  
ttalatgagatttaaggaatttggtcaggggtcggggctagtttcttcagtgttctcg  
gcgacctctaaacacctttatcagtcctgggaatgtt

>IGR3207a

tcggtctctgagggggctgcagtacatcctgtaggcagacagcgagacagggatgttcta  
tctaggtatgcctgctgcaaggggggtctgggtatggaatttatatgagatttaaggaa  
tttggctcagggctggggctagtttcttcagtgttctggcgacctctaaacaccttt  
atcagtgctgggaatgtttaaggccccagcttgggtcgaagcctacaggaaaaaacctt  
cggctgtctgggtcatagatgggtcaaggcatttggtattgtcaggagagagaaaaaag  
tgagggaacctgggggacctacatgagacaatgagttcattatcaagtgttcataaag  
aaaaggctgtgacgatgtgggtctggagtggaccaggctggagattcaaaactgagtga  
tagatttacatgggtccagaagcctttgagggcatggaggaatgtcaaatgtagtggatt  
aaatggtgcccccaacccaccaaattgcattcatgtcctactacctggatcctgtgaa  
tgtgacctatttggaaaaatggacctacagatattattaagttacaggttattaaggg  
agctgttgacgtgtgtccagggcctgcaagagtcacagcattcaggagggttcagtgc  
caaacctcctggattacctgggtagacctccaatctgc

>IGR3208a

accaaattgcattcatgtcctactacctggatcctgtgaatgtgacctatttggaaaa  
tggaccttacagatattattaagttacaggttattaaggagctgttgacgtggttccag  
ggcctgcaagagtcacagcattcaggagggcttcagtgccaaacctcctggattacct  
gggtagacctccaatctgccctggattacctgggtagacgctacagccaatgacagtta  
ttttataagaacagaagggcagaagatgcagacaccgaggagaagtgcaggtgaagat  
ggggcagagattcgtgtatagaccacaagccaaggaactcctaagccaccaggagctg  
gaagaggcaaggaggggttcgccctagagccttcagaggagcacaccccgtaacatt  
ttgatttggacttctggcctccagaactgtgagagaataaaattctgttgacttaaggc  
acctagttcgtgtaatttgttggcaacccaggaaatgaatagatcaggagcccaga  
tggagctcagggccttatgttaagggtcagtggtgaaagtgaggctacaaaggcagag  
gtcagaaatggtatcttctgggtggaggcaggtagaggaaaaggaatataaaaacaaatg  
aatggccacttctgcaaggcaggaagaccaaggagacat

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

>IGR1350a

gaaatcaggaggtttccgggaaccgaaccacgctgggagcgtgaggtctgcgcagcggc  
ggggggccgggggacgggcgggcgtccagtgttaccggccagtggccagctggaagtcca  
gcggggagccggggaaaaccggccccggaaaagccccacctgaatgcacctgccaggcct  
ctccggtatggtgttcatgctgaggggtgggggtgtgaaggatggacctgcctgcaggggtg  
ccttagggaatgagggaggagtctacaagctaaggggtttgaggggtgtgcacgcgggg  
aaagaggggactgtgcgcaggcaggtgggatctgaggaattgggatatccccctaaatga  
ctgaggtccccagctgtccctcactgtcacatccatcttattgtcttatacgtatgag  
gtctccttactgagatcatatccgtagtgtctcttttgccttattgttgaggatttcc  
ccgaacatgacttggagcccttgagagtgcacctgactgtctggtctagtctcctggat  
ctagaaccaccaacctccacgggggcttgtactgtttactaagtgagaaaaggagta  
gggtgagttcgaggcatctgtgaggtccatatgccttctgacctgctccccacaggacc  
cctagcccactcaggtcctgccaatgtcccagttgaagga

>IGR1351a

ttgagagtgagccctgactgtctggtctagtctcctggatctagaaccaccaacctcca  
cggggggcttgtactgtttactaagtgagaaaaggagtagggtagttcgaggcatctg  
tgaggtccatatgccttctgacctgctccccacaggaccctagcccactcaggtcctg  
ccatgtcccagttgaaggagccccactctgcagaagatgccttggcttttggggagg  
ggcttccctttagttccctgagaactgccttccagctgggatggctgggcagaaaggcgg  
actgtagtcatcacagaggaatgtggcctgggggtcagccacttcttctctcccagg  
gcttggagctcagggcagggtattatggtgggtggccctggatctgagacaagaaggctg  
ggagtttgggtggcagaggagaggtccagtacctccctgatctctgcagcccacagcag  
tacctgggggtcaaggtggacagtgtcactggcaagcccatttctaaatgcatgcctt  
tgagaccacaagtctatggtgaagatctcttcttatggccctgagaccatggctcttg  
gaaagacataaatcagactaaatggagctccctcagcccagaagagctgggggtggggca  
ggatcagtggtggctattctggaagcagccagctagcca

>IGR1352a

agtgtcactggcgaagcccatgttctctaaatgcatgcctttgagaccacaagtctatggt  
aaggatctcttctcttatggccctgagaccatggctcttggaaagacataaatcagacta  
aatggagctccctcagcccagaagagctgggggtggggcaggtatcagtgggtggctattc  
tggaagcagccagctagccagtgaaggagaggcagcaagacctccctagcatccctgta  
tgggccaaactgactttcaccagcccaggcttaggatcaggggtggctggcctgggagag  
ggccaggggaaagtccaatactgcaagagtggagcttgtgccatgagcgcctggcaacc  
tggtgactcaacctggggaatcccaactccaggggcagccctggaatgaggctcaggac  
agtgaaggagtgccacggaggggggccaccaaccgtggcagcttttagtgaggccacagat  
caaatagggtgttgccttcttctcctgtggcccagggttagaaacagtgatgctggt  
cctctgcccgttccaaatagtattttgatccagggaatccaacttaatcctagcccat  
aaatttgacctggcagaggacctggtcctcagaatgtctgttgggctccatttgatgt  
tacatctagaaatggtagatgtagctcaagctaataaat

>IGR1353a

ctttctctgtggcccagggttagaaacagtgatgctggtcctctgcccgggtccaaatag  
tattttgatccagggaatccaacttaatcctagcccataaatttgacctggcagagga



-363-

cctggctcctcagaatgtctgtgttgggctccattgatgttacatcttagaaatggtaga  
ttagctcaagctaataaatcccacaggaatgtgtcttgtgtctggactcagcaaat  
gctgagttattggtatattatggaaggaaagcagggcagagacaggagaacaggtgtcc  
ctgtgggtgctcggcctgttactgtttagcctcaggagccagcctcagctgagcaga  
gagcaggtgccccatgaaccagtgtgacatggttgatggatggatggatggatgg  
atggatggatggatggatggacgaacagacagatggatagataggaatatggatggtgga  
ttcagatggcctcagcagcatgcacatttcccacgatggtctttgcaataagacaatt  
tccacagaaactggtgggtgccccagaaggaggagggaagaatgtggcttctccaagca  
gcgctgtggtgtttctgccaggttctatcttccaaggggacctctgtcccttccca  
tagccctgttgacatgtgtggccctcaaagtctctgcaga

&gt;IGR1354a

tgcacatttccccacgatggtctttgcaataagacaatttccacagaaactggtgggtg  
ccccagaaggaggagggaagaatgtggcttctccaagcagcgtgtggtgtttctgcc  
aggttctatcttccaaggggacctctgtcccttcccatagccctgttgacatgtgtg  
gcccccaaagtctgcagagactgggagcctagtggcaagggccaccagacacagaac  
aggggaaaggagctgttaacattagctggctgtccattctctctggaagtaggtcc  
acaaagaaatttaggtaggacctcagccaggtgtgaaagattccagtttttctctgca  
tgagtaagtccttgggaaagcatctgttgaccaattgactgattgactggcaaggaggc  
aaagggtcagcagagaccacctgcctggatggtgtgggagaaagcatgaccgccctcca  
ccttgacaggtgacaaaccacagtgaatgtgtcaccacatcagatagccagcatgaattg  
ctgactgggagtggttaaaggctctgggtgcataattgggagcaaatggacaagggtat  
gctgggagctctaagccaggaggcctctggtggctagtccctccaggaagcaaaagcca  
ttatttctccttgagaatccccgtgaatattggagagg

&gt;IGR1355a

cagtgaatgtgtcaccacatcagatagccagcatgaattgtgcactgggagtggttaa  
ggtctgggtgcataattgggagcaaatggacaagggtatgctgggagctctaagccagg  
aggcctctggtggttagtcacctccaggaagcaaaagccattatttctccttgagaatc  
cccgtgaatatggagagggtctctcacgccccatgggctggggcatgagtgtttatg  
ctttgcttttagtgaggagggtgactccagaaggctaaagatttagggacagctgatggt  
cctggaatgcttctcagccttgggcctacgctgggacctgtgaggggacttagaagtaag  
caccgtggtctccactactaacctgcatgtgagctctccaaggacagaggatgctcagaa  
ccacccccacccccactctggcaccacagcattgtctcaggcagtaggcacttagt  
aagtgtgctctgattgcagtgcagacgtatgtcatacctcagtaagaggcaaaagggc  
agagatgctgggagtatggagacggagcaggttatctcagtcattgttcacagatggcta  
ctctgaggaggggacagttcagcaaaagcctcaaaggatgagtcaaagggttaataggctaa  
tagtaggggaggcattccagaatgtgaaaacagcccaagg

&gt;IGR1356a

gccagacgtatgtcatacctcagtaagaggcaaaaggcagagatgctgggagtatgga  
gacggagcaggttatctcagtcattgttcacagatggctactctgaggaggggacagttc  
agcaaaagcctcaaaggatgagtcaaagggttaataggctaatagtaggggaggcattccag  
aatgtgaaaacagcccaaggaaaggcttggcagctcagaagtgcagaacggatctcgctt  
ttggtgtggcctggagtagctgccccagaagctgaggctggaccaaccagtaggggccac

actctgaagagcctggatgctgtgctcaagagtggactctatcctggtagacagaggccg  
ctcagggtggactgatgtgccttccttctggagccaaggcccagaccagggtctatc  
atcagggtgctgttgaattaaatgctagggcaggtcttctgagggccactggtggcctga  
cciatgctttagaaaactttctgtgctgctacagaggattacgcctgtggcacaccagg  
gcaagactagggtgagatagttcctaaaggcacaacatttaaggaggtactcgtctca  
ggggccaaccctatacttgggtgagctgacggtagtagctccttaaaggttcacct  
aagcacctgccctgcctgcttgcctccaccctatctggtcc

>IGR1357a

ctgtggctgctacagaggattacgcctgtggcacaccagggaagactagggtgagatag  
ttcctaaaggcacaacatttaaggaggtactcgtctcaggggccaaccctatacttgg  
tgagctgacggtagtagctccttaaaggttcacctaaagcacctgccctgcctgct  
tgcctccaccctatctggtccctctgcacactggaggctgggaggtagactagaggcagc  
tcaagtatccaggcatattagggctgtggccacaggggtagagataggcctagttag  
agcagaatcagatgacaggatttccaggacatgagactggctggagcaggaccatccc  
ccctccctgggtgccccattctgggagaagtgtaggagacccccactctgcctaggagt  
ctatatgtccacagccagggccaaaacaagatcttaggccttggcttctgtcctaggtta  
tgagctagggaaaccaaggacactaagctaaagagagtagggcagcagggtaaaaagcca  
caggctgccccaggaaggccagggccactggagaccacagctagaacctacaacctatgc  
ccgagactgctcggccttgcctttggatgcttgggcacagcaggaaggaaagtataagg  
gtgcctccactgctggatggggcgtgtctgtcagtcctc

>IGR1358a

cactaagctaaagagagtagggcagcaggtgaaaaagccacaggctgccccaggaaggcc  
caggccactggagaccacagctagaacctacaacctatgtcccagactgctcggccttgc  
cctttggatgcttgggcacagcaggaaggaaagtataagggtgcctccactgctggatgg  
ggcgtgtctgtcagtcctcttcccccgctgtctgccagcaagaccagggggccacccc  
cagggtgctccccaggggattagcagcttgggtccccagcccacacctagaaagctctga  
ccctatggcaacagcacccttgcctggctaataatggaaaaccaaccctttccctcctct  
agcaggcggaagttaggggtcttggagaaagagaagggtgcaggcacaatgctgcggga  
aagggtgggggcaggaattcaggatggactttggctatggcagataagcagggtgccacct  
ggtaaacagagcacctatttctgatcagtagcctttgaacagatgccagagaggccagg  
acacaagcaaaaggcagaaatgggggtttctaaggtaactgctgagcagggtggtctcgc  
tgggagtccttgccttctctacagcatcatggcccaggaaggcctgcctcctctgtga  
gcactgttctcctcaggtgggctcaggaactccctcagat

>IGR1359a

cctgatcagtagcctttgaacagatgccagagaggccaggacacaagcaaaggcagaaat  
gggggtttctaaggttaactgctgagcagggtggtctcgtgggagtccctgccttctcc  
tacagcatcatggcccaggaaggcctgcctcctctgttgagcactgttctcctcaggtgg  
gctcaggaactccctcagattccccctgagcaagccacctggccccacagaggatttggc  
ctaggactgaaggctgagagctaggcctgagacagggtagtgtcccaggcaccacaaaaa  
gaggatttgccttaaaattctcccgcaactatccaaggctaggaatagaggcaggac  
acatcagcagaacaaaatctcagagcgtccctgagcagctgcctggctctcagatgcaa  
acctggtagacacacacttctcctgagctctaggccatggctcaggcacaaggaccac

ctcggagtgtggatgaggtgccagtgagaggaggtgagaggaccagtgatgcca  
ctttgaccttcagctgtgagccaggaagtccaggcagacacagccacaagcagggccat  
gccctgggcagccacttcccagaaaagtcttgcgcgcaaacagagagagtggcctccc  
tgccctgcatgacctggcacctggagtcctcacctcaga

>IGR1360a

gccagtgagcagaggagtgagaggaccagtgatgccactttgaccttcagctgtga  
gccaggaagtccaggcagacacagccacaagcagggccatgccctgggcagccactccc  
agaaaagtcttgcgcgcaaacagagagagtggccttcccctgccctgcatgacctggca  
cctggagtcctcacctcagataagaagccagtagttctaggagttaactacatcatggc  
tcttgattacagtgaagaccggggccttgnctacccagggaacttctctccggggc  
aatggtgtggatggctgctgttcttctatgactcagtggtggcctggtgctcaggagagc  
tgctccttcccatgccctggatgtgagctcagcagccatcttgattaccaggacaatgt  
gagctccacacaccacctcagacctcacctaccgggctctcaggagagatgaggcct  
cccgagagtgccacaaagagaaaaaagcggcttggctgcaaaaactgccacgcacccca  
gatgccatgctcagctagcagccctgggtgccacacagcctgagagcaggtgggagccata  
gatgcaacaagctgtcatcaggcatgggagggctgggctgccatgctgaggtggtgggg  
tgggaaaatcaactgcagccaccagggaagtacaggagca

>IGR1361a

aaaaaagcggcttggctgcaaaaactgccacgcacccagatgccatgctcagctagca  
gccctggtgccacagcctgagagcaggtgggagccatagatgcaacaagctgtcatca  
ggcatgggagggctgggtgccatgctgaggtggtgggggtgggaaaatcaactgcagc  
caccaggaagtacaggagcagagtaaacacagttgaggtcaaaagggtccaatttcctt  
ggacaagcaggcctcaagaaggcctctgagctgcactgccaactgtattgtattctgtg  
tgtgttctgtgtaacctaacacccccggcgccaagggaagccccttggccctcccttg  
gggtggcagccaactaggaccagagaagtggcagttgtgtcataaagtcccaagacac  
ttctggaggaatcaatcttctttttagtcttctgctcatttttctgtcattttcc  
tgtatgtatatcttttccctctcttcttagcccagaaatgcttattgaccactggtggc  
ctattgggagtggtattctgacacattcacatttactctgtcccagatgctaggcaca  
gaagtaggtgctatgggcacaggcattcacaagaattattgagccatactatgtgcc  
agacatggctctagaccctaaggatatagaatgaataag

>IGR1362a

ctctctctagcccagaaatgcttattgaccactggtggcctattgggagtggtgactt  
gacacattcacatttactctgtgccagatgctaggcacagaagtaggtgctatgggcac  
aggcattcgacaagaatttattgagccatactatgtgccagacatggctctagacccta  
aggatatagaatgaataaggcaacccccctgctcttatgaaactcatataccggtggag  
gcagacaacacacaaaataaacaaggaaagtgtcacatcgtgataattattctgagaaata  
aaatagcatgatatcatagagtagaggtggtcacattagattggcactctaggac  
tgtctatctgaggaggtgacattttagtctctaagtacagaaggggtgacaatgtgca  
gaacaaggggaagtgcattccaggcagagggaatagctagtccaaggccttgggaaaag  
aacaagctcagctgtttgcaggaaaagattggtgtggctgcagcatggtgggcaaggag  
gtgaatgatagacgatgaatgatagaacatgcagctcataaggtagggaaggggtcagata  
agggtgggcatttggggcctctgatcaggggcttgggccttatgcacagggtgaaatgggc

cagtgtgcattttacttatttttaaacttttaagttttct

&gt;IGR1363a

[illegible]

>IGR1364a

[illegible]

>IGR1365a

atagtaaatacacatatgtaaagatgctcaacatcattagtcattaggggacatgcaagtt  
aaaaccacgatgaaatgccactacacatctacctggatggctaaaatgaaaaagactaac  
tgtccaagtgttggcaatgacgtggaacaactgggatgctcctaactgctggtgggaa  
tgtaaaatattcatttttcttgacttttaatagagatagggtctcagtatgtcccca  
ggctggtcttgaactcctgagctcaagtaactctcccactttggcctcaaagatgctgg  
gataacaggcgtgagccaccatgccagctgggaaggtaaaataatacaactacagtcac  
gtgctgcataatgatttttggtcaaggacagactgcataacgacaatgatctcatgaga  
ttacaactgtatctttactgtgcctttctgtgttagatatgcttagatacacaat  
atttacccctgtgtggcagtcgcctacagtgtctcagcagagttaacttgctgtacaggctt  
gtaccctaggagcaataggctataccacatagcctaggtgtttgtaggttataccatct  
aggtttgtgtaagtacactctatgatattcacacaaggacaaaattacctaatagaagcac  
ttctcagactgtatccctgttactaagcaatacatgatta

&gt;IGR1366a

cgctacagtgtcagcagagttacttgcgttacaggctgtaccctaggagcaataggc  
tataccacatagcctaggtgttggtaggtataccatctaggttgtgtaagtacactc  
tatgatattcacacaaggacaaaattacctaataagcacttctcagactgtatcctgt  
tactaagcaatacatgattacattggaaagcaatttggcagtttttaaatagctaaata  
tatgcctatcatacagcctagccattcaattccaggtatttatccacaataaaggaaagt  
gtgtgctcacacaaagatttggatatgaatgcttacagcagcttaatttgaatagccaa  
aacctggaaacaacaaaaatgaccatccacaagacagtggataaatagcttatggtatct  
acgcagtggattaccaccaggttccaggttaggtaagataaagtaaacatactccacc  
tgtctctccactaagtgaagcaatagaacctgtacagaatgtatgaaggactctgaaga  
gtaaatagcagcagatgaattaggaaagaaaaatcagaatttggagtaccacggaattgg  
aggagtctccattttccctctagtactccctgggctagactcgaacagcctgaaacc  
tggaagtgcagcagcagcacagacagtgggaatcccagag

>IGR1367a

gcaatagaacctgtacagaatgtatgaaggactctgaagagtaaatgcagcagatgaat  
taggaaagaaaaatcagaatttggagtaccacggaattggaggagtctccattttccc  
tctagtactccctgggctagactcgaacagcctgaaacctggaagtgcagcagcaggcac  
agacagtgggaatcccagagccctctagtctgttggagggtggggagggaactccta  
atgctcagaaagagtgcagaaataaccacccccacgccacctttttcttttctccatt  
ctctcatgctcagacctctggcattctgttgcaatggcatgagaggactaaaggcacc  
taaaattctaaggagagaaaaactgtctgttggacaagcccaagagggtctccctcctt  
cccccttctctctctctctctctctctctctctctcaatatctctctctcttgc  
cagttgacctagctgagggcacagtcgcaggaagtacacagcagagcaaggtagctaaa  
actccagatttctggccagaggacaaaaggaggagaccagggaatcagaaagtaccag  
ggagatcatggaaggagggaatgctggaaactgaaccacaaaagtggttatgaattcc  
tgggctcaactccaaactgagcttgcattggatctagcata

>IGR1368a

cacagtcgcaggaagtacacagcagagcaaggtagctaaaactccagatttctggccaga  
ggacaaaaggaggagaccagggaatcagaaagtaccaggagatcatggaaggaggagg  
aatgttgaaactgaaccacaaaagttgttatgaattctgggctcaactccaaactga  
gcttgcattggatctagcatacaaagacttgagaactgaacctaaaggataaacaccacc  
ttttctcaagctgaccactggagggtgcacacacaggacagatctaaacagcactataaa  
ggcttggaaaatggaacaaacattgaaactacaatccacagaaggctggcggaaactgt  
ggcccaaatgcagctgcattgattgcctgctaaaaatataaacattaacactctccacaat  
gttcaataataccagagctctataaaatttaaaatgtccaggatacaaaaccaaagta  
tgatcttctggcctatgataggaaaaatctcatttgcattgggaaaagacaatcaaaag  
agaacaatgatgagatgttgaattaaagtaacaaagactttaaagtactactatgaaaat  
gctccaagtaaacctcttggaaatgaatggaagatggacagctctcagcaaaagaaatagga  
gatataaagaatagggaagtaaaagtttggaaacttaaaa

>IGR1369a

aggaaaaatctcatttgcattgggaaaagacaatcaaaagagaacaatgatgagatgtg  
gaattaagtaacaaagactttaaagtactactatgaaaatgctccaagtaaacctcttg  
gaatgaatggaagatggacagctctcagcaaaagaaataggagatataaagaatagggaagt

aaaagtttgaacttaaaaataaagggccaggcatagtagttcatgtataatcccaa  
cactttgagaggccaaggcaggagataacttgagcccaagagttcgaagctagcctggg  
ccacaaagtgagaccccgtctctaaaaaaataaagttaggtgtgttggcatgaacct  
gtggtcctagctacttgaaggctgagatgggaggatagctcaaacctgggagttcgagg  
ctgcagtgagtcgtgatcacaccactgcactacagcctgagtgacaaagcaagaccccg  
ctcaataataaataaataaataaataaataaataaataaataaagaaccaaatttcagt  
ctcactaggttaactcaagagcagaatataaatgagaggaaagagggaagccagtaactgga  
agacagaccaacagaaattatccaaacagaaaaacagtgaaaaaagatttttaaaagt  
gaatagaacctcagagactagtgagacaataccaaaggct

>IGR1370a

ataaataaataaataaataaataaagaaccaaatttcagtgtcactaggttaactcaagag  
cagaatataaatgagaggaaaagagggaagccagtaactggaagacagaccaacagaaatta  
tccaaacagaaaaacagtgaaaaaagatttttaaaagtgaatagaacctcagagacta  
gtgagacaataccaaagggtctaataatttatgtcattagagttccagaaggaaagaagaaa  
gagtgacagtgaagataaaaatgtttgaggaaatattgactaaaacatcttcaatttga  
aaaggacataaaaactgaagaatatatgtacatatatatatatatatacacacatac  
atacatataagcatacatgtaccattgctagagaaaaatgacacatcacacataggagaa  
caattcaaatgacttcagcttctcatgaggagagaggaaatctcatcgtagagaccagt  
aggaagtggaaatcacatctttaaatagaagaaaaagaacctcaaccaccattctcttc  
acaatttcaagaatactcaatgaaaatatgcctcaggagtgaagtgaaataaagacgtt  
ttcagatgaaggaaaactaagagagttctttgacaacagaccgtcctaaaaataattgct  
acaagaagttttcagacagatgagaatgataccagaag

>IGR1371a

taaaatgaagaaaaagaacctcaaccaccattctcttcacaatttcaagaataactcaa  
tgaaaatatgcctcaggagtgaagtgaaataaagacgttttcagatgaaggaaaactaa  
gagagttctttgacaacagaccgtcctaaaaataattgctacaagaagttttcagacag  
atgagaaatgataccagaagtttaacttggaatatcaggaatgaaaaaaagaccaacagaa  
atggttaaagatctgaggtaatgcaacattctgtgctgctcttgagttctttaaatacgt  
tttatggttaaacaataaataacatttttgatggtgtttcaatgttatatgtaga  
tagcacataagacaactacaacataaagagggtagaataaaagaaactaaagttttacat  
taccttaaaatggtaaaatattgattctaagtagacctgaaaaggtaagacgtatat  
tgtaatccctggagcaaccactaaaaacaaaaacaaaaacagaactatacaagcag  
ataaagttaaaaacacaataatgtccttaaaatggtagacacaaatccaaccatatcag  
taattccattaaatgtaaatgatctaagaatgggtatcagcaaaatggaatagagaactc  
caaaactccttttccataaaaaacagtgaaaaaaactgg

>IGR1372a

ctaaaaacaaaaacaaaaacagaactatacaagcagataaagttaaaaacacaata  
aatgtccttaaaatggtagacacaaatccaaccatatcagtaattccattaaatgtaaat  
gatctaagaatggtatcagcaaaaatggaatagagaactccaaactccttttccataa  
aaaacagtgaaaaaaactggcaaaatcaactttattagaactctggagactaataaaaag  
tttaataaataaataaataattcttttttaataaataaattcttttttttttttgag  
ggagagtcctattctgttgcctctggctggagtgcagtgggtgtgatcttggctcactgcaa

ccccacctcctgggttcaagcgattctcctgcctcagcctcctgagtagctgggattac  
aggtgccctccaccatgccagctaattttgtattttcagtgaggcagggttcacca  
tgttgccaggtggtcttgaactcttgacttcaaatgatccaccacctcagcctcca  
aagtgttgggtttacaggcatgagccacaatgccagccaataaattttaatcaagaaga  
aaaacggctaatactcagtgggaaaacactgtggtgttttaacatacctgggctccattc  
tctctttcccagcttgggtggcagccttgaagacaacagc

>IGR1373a

aaactcttgacttcaaatgatccaccacctcagcctcccaaagtgttgggtttacaggca  
tgagccacaatgccagccaataaattttaatcaagaagaaaaacggctaatactcagtg  
ggaaaacactgtggtgttttaacatacctgggctccattctcctctttcccagcttgggtg  
gcagccttgaagacaacagcctgcattcttgatataaggttcttagtgttcgaggagcag  
aatggaacttacttcaaaaggattgtggtgcctgtttgacctgtctgttgggtccctg  
aaggatgagcacaagatttactttaatttcacctaaacttagaacttcccagggtga  
agcagctacctggggcatttggaaaaacaaacaaaccacacacacatgcacagagttaaa  
aacaatgcattcactaatggtaacagttagggaataatagacaaacaaaagcttaag  
aaaaaaggctggagaaggaaacactttaagaaataagggtttaaaaagctttctgata  
tctaagaaggtcacacatatgtcagaaaatacctagaagactctacacttcacctct  
gactgacctccagactctgcaagcagaaaaggaaggttaaggcagagttgtaaacagcct  
ggctaagtgttaaaagccacacctcaaaacacatacagag

>IGR1374a

acactttaagaaataagggttttaaaagctttctggatatctaagaaggtcacacatat  
gctcagaaaatacctagaagactctacacttcacctctgactgacctccagactctgc  
aagcagaaaaggaaggttaaggcagagttgtaaacagcctggctaagtgttaaaagccac  
acctcaaacacatacagagctcatctgaagatattgggaattttttttatgttggtc  
taggtataaaggaaatttcagtcactagccaaccactagtggaaaagtttaattggaa  
aagcttttcagtgccacacgtgacaaagaatacagactttaaaaaattagttcagaaa  
ggcactaagttaacaacaacaacaacaacaacaaaaacaactagcaacaatgac  
aacaacctgaaaggggagcagaatgtgatttcagagttgtcacattataacagtaaaa  
atgtccagttttcaacaaaaaaattacatgccatgaaaagacagaaaaagtatgggtc  
atacgcagcaaaaaataattaagaaactgtccttgaggaagctcaggaattgaacttaa  
tagattaagattttaaatcaagtatttttaaatgtactgaaagagctaaaagaaaccata  
tgcaaaagaactaaaggaaagcatgaaaacagtgtctcgcc

>IGR1375a

aaaattacatgccaatgaaaagacagaaaaaagtatggttcatacgagcaaaaaataatta  
atagaaactgtccttgaggaagctcaggaattgaacttaataagattaagattttaatca  
agtatttttaaatgtactgaaagagctaaaaagaaacatatgcaagaactaaaggaaag  
catgaaaacagtgtctcgctaataagcagatttcagtaaaagaatagaaattataaaaaa  
ggacttagaaattttgagttaaagaagtaaaaataagtgaatgaacaatgcactagaaggg  
gtcaacagctatgtgagtaggcaagaatgaatcagtgattgaagacaggtcaattga  
gattaccagctctgaggagcagaaaaagaatgaagaaaaacaatatagagcgttaagtggc  
ctgtggaataccactgatggtaccaacatatgcataccagaagaccagggggagaggaa  
agaaagaaaggggatgaaagaatattgaagaaataatggctcaaaacttctcaaatgg

gtaaaagtaaaggatatgaattacacatgcaagaagctcaacaaacccaagtaggata  
aactcagatatattcatattgtgatacattataatccaatggtaagataaatacaaaagaga  
gaatcctgaaagcagtcagagagaagtgatgagtcataata

>IGR1376a

aatatttgaagaaataatggctcaaaacttctcaaatttggtaaaagtaaaggatatgaa  
tttacacatgcaagaagctcaacaaacccaagtaggataaactcagatatattcatattgt  
gatacattataatccaatggtaagataaatacaaaagagagaatcctgaaagcagtcaga  
gagaagtgatgagtcataatacaaggatacttaattgtgattaatggctaatttccatcag  
aaaccacagaggccaaaaggcaatatgatgacatattcaaaagagctgaaagaaaaactgt  
caaccaagaattccatatgtggcaaaactatttctcaaacatgaaggagaagttaagaca  
ttcccagataaacaacaaactaacagagttcttgcagtagtgctgtgtacaaaagtgtg  
ctaaagggagtccttcaggctgaaatgaaagaacacttggatgattaattttatgtgtc  
aactgactgagccacaggggtgctggatgtttggtaaacattattctggatgtttccg  
tgaggatgtttacaggtgaaaataacatttaattggtaactgagtaaggagattacc  
ctccctaataatgggtgggcctcattcaatcagttaaaggcctaataagaacaaaatgact  
gaccttccccaagtaaaagagagtttctcctgcctgcct

>IGR1377a

tgcttgatgtttggtaaacattattctggatgtttccgtgaggatgtttacaggtgaa  
aataacatttaattggtaactgagtaaggagattaccctccctaataatgggtgggcc  
tattcaatcagttaaaggcctaataagaacaaaatgactgaccttcccaagtaaaag  
agagtttctcctgcctgcctattcttgaactgggacattggcttttcttgccttcagac  
tcaaactgaaacattggttcttcttctgtctggagcctgctggccttcagactagaacta  
agtcattaaactctcctgggtctccagcttgccaagtcaccgtggagattttggtactgt  
cagtcctctgtaatcatgagaattaattctttataatctcctctctctctctacacaca  
tacacacaaacatgtgtatatgtatatacatatataatataatataatatacagcttg  
ctggttctgtttctctggagaacctgactaatacaactaatacaacattatgcagtaac  
ttaatccacatgaaaaataaagaacaccagttatgataactatgtaggtaaatataaac  
attaatattaatgatataattttgttttaactctttatttctatgatgttaaaata  
caatcataaaacaatgatcctaaaactatgttgatgggca

>IGR1378a

aacctgactaatacaactaatacaacattatgcagtaacttaaatccacatgaaaaata  
aagaacaccagttatgataactatgtaggtaaatataaacattatattatgatataatt  
ttttgttttaactctttatttctatgatgttaaaatacaatcataaaacaatgatcc  
taaaactatgttgatgggcataggtgcataaagatggttgggtgtttgtttgtttgtt  
ttgtttcttgggtttttgtttgtttttgttagacagagtctcactctgtcaccca  
ggctggagtgtagtggcaccatcttgactactgcaacctccacctccaggttcaagca  
attctgtgcctcagcctcctgagtagctgggattacaggcacataaccaccacgccagc  
taatttttgtatttttagtagacatggggttcatcatgttgccaggctggtcttgaa  
ctcctggcctcaagtgatctgcctgcctcagcctcctaaagtgtgggattaaaggcatg  
agctaccaccccgccacattacataaagatgtaatctgtgacattaacaacaaaagtta  
gagatgaaattatagcagtaactttttgtataccattgaaactaagttgttattaat  
ttaaattagagtgttgtaaattaagatgttaattgtaac



## &gt;IGR1379a

gcctgcctcagcctcctaaagtgtgggattaaaggcatgagctaccacccggccacat  
tacataaagatgtaatctgtgacattaacaacaaaagttagagatgaaattatacagcag  
taactttttgtataaccattgaaactaagttgttattaatttaaattagagtgtgtaaa  
ttaagatgtaattgtaatcccaggacaaatgctaagaatataatgtagtaaataa  
atgagaaaaggaatcaaaagagtatactacaaaaatctatcttacacaaaagaagacaata  
atggagggaactgaggaaacataaaggataaaagacataatagaggacaaatagcaaaatga  
cagaattaagttctctcttcatcagtaattatattaaatgtaaatgaattaagctcttcaa  
tgaaaaggcagagattggcagaatggattttaaaaagaacctgatccaactatatgctg  
tctataagagacttatttagattcaaagacacaaataattccaagtgtaaagatggaa  
agcataccatgcaaacagtaacccaaaatgagctgaagtggctatgctaatacagacaa  
aatggacattgacacaaaaatgtttcaaaaaacaaagaagtacattaatatgataaaatg  
ctcaatgtattaagaagatattgcaattataacaaatag

## &gt;IGR1380a

gattcaaagacacaaataatttccaagtgtaaagatggaaagcataccatgcaaacagta  
accaaaaatgagctgaagtggctatgctaatacagacaaaatggacattgacacaaaaa  
tgtttcaaaaaacaaagaagtacattaatatgataaaatgctcaatgtattaagaagata  
ttgaattataacaaataggcacttaacaacagagaccaagaacctatgacaaaagatt  
gacagaattgaatgaaaagttaaaaatagtcggaggcaaggtgcagtggctcatgccta  
taatcccagcacaatgggaggctgaggcaggcagatcactgaagtcaggagttcgagac  
ctgctgggccaacatggcaaaacccgtcttactaaaaatacaaaaattagccaggcat  
ggtgaagcacacctgtaattccagctactcaggaagctgaggcacgagaatcactgaac  
ccaggaggcagagggtgcagtgaaccaaggtcatgtcattgcactccagcctacatgatg  
gaatgagattctatctcaaaaaaaaaaaaaaagttggagacttaatactcatgttcaatc  
gtagctagaacaactagacaaaaggtaaacaaagaatagaagacttgaacaacaataaa  
agccaccaaacctaacagacatctacagaacatttcattc

## &gt;IGR1381a

tgagccaaggtcatgtcattgcactccagcctacatgatggaatgagattctatctcaa  
aaaaaaaaaaaagttggagacttaatactcatgttcaatcgtagctagaacaactagaca  
aaaggtaaacaaagaatagaagacttgaacaacaataaaagccaccaaacctaacagac  
atctacagaacatttcattcaatgacagcagaatacatattattcttctgcacatgga  
aatattctatagaagagacattgtgttaggccacaaaacaagtctcaataaattagacaa  
gattgaaatcaaacagggccagggtgtggtgcctcacacctggaatcccagcactttggga  
ggccgagacaggcagatcacccgaggtcaggagttcgagaccagcctgaccaacatggtg  
aaacccacctctactaaaaatacaaaaattagctgggcgtagtgtgcatgcctgtaatc  
ccagctactcgaggggctgaggcaggagaattgctgaactcaggaggtggaggtgcag  
tgagccgagatcacaccattgcacttcagcctgggcaac

## &gt;IGR3209a

ttgtggcaacccaggaaatgaatagatcaggagcccagatggagtctgagggccttatg  
ttaagggctgagtgggtgaaagtgaggctacaaggcagaggtcagaaatggtatctctg  
ggtggaggcaggttagaggaaggaatataaaaacaaatgaatggccacttcctgcaagg  
caggaagaccaaggagacatgatcctcagaagtctgcccttctcaaggctgcagattt

>IGR3210a

&gt;IGR3211a

&gt;IGR3212a

tgaaaaagatggagagaagtgggtggattagagggagatttaggggtaaaattgaacaga  
cttgggatataggtaatatagggtctggggatgagggagaggagctgccagtatgactc  
ccaggcttctggttaggtaactgatgggaagtatctcttcagtacagcagtgaagacag  
gatgtgtggagggggaagatgtagggggagaacaataactctgtgtggacatgttgcca  
ttgaggtgcctgtggacactcaagtggggatgtacactgaacagtgagttacatgaatct  
gggggttcagcagtaaggataagggtaaagagagaaaattgtgtcacctgcgtgtaaagag  
aagcgtgaagtggaaagcctagacctgagttttgaggaacccccaacctttactaatagg

gagaggatgctgaagaagcttgagcagaggtggccagaaaggatgaggggaaaccaaggg  
aatcagtggtccagaggggctgtggtcatcgttgggtgtcagacactgctcagggccct  
ggcagatgaggtctgaagaacagccgttgaaattggagattgagggctacagtttattga  
gacctggtttggtgctgttagggagctagaaggctgactgcagggcctgaagagtgggag  
agacagctccttttagggcctgaagagtgggagagatgtga

>IGR3213a

ctgtggtcatcgttgggtgtcagacactgctcagggccctggcagatgaggtctgaagaa  
cagccgttgaaattggagattggaggctacagtttattgagacctggtttggtgctgtta  
gggagctagaaggctgactgcagggcctgaagagtgggagagacagctcctttagggcct  
gaagagtgggagagatgtgaggatggggagacagctcttcaagaaattccgctgcggtt  
gagaacagagacactcagtggtgctgaatgagggtttgttccatagtagaggcttgaa  
cacatttacaggccaatgggaaagatccagttgagagcgggtagttgagccttcaggaga  
gaaaagggatgttccatggggcaaacctctgagaagggggaggagatggaaggaagcttc  
tgtggatgtacagatgcaggagggtttgttagttttagccgggctcagccggtggct  
gacgcaggcaggaacaatggctcacccatgtttatgtatttccgtgtcgtgctcct  
gcttccccaggctctgggcccctgcttggcccgtgtccgtagggaaatatccacactgg  
gcctgggcggaggctgggcatctcccgtctgggcttgcctcctgatgagattctcagac  
cgtgcttcccctcattcatgagangaagggtcacagagca

>IGR3214a

ctcacccatgtttatgtgtatttccgtgtcgtgctcctgcttccccaggctctgggcc  
gcctgcttggcccgtgtgcccgtagggaaatatccacactgggcctgggcggaggctgggca  
tctccgctctgggctgtctccctgatgagattctcagaccgtgcttcccctcattcatg  
agangaagggtcacagagcaggcgtgggaacctgcctggccgccagggcctcctcccgt  
caggtgaggtttgctgcattctgtccttattccctccagactggattggctgaacca  
ggtgtccactcttttggcccatggcataaagaagggtttgggcaaccagtggtgccccca  
ggtgtgtaccgccccccgctccgccccaccagcctttgatggcccccttctcacc  
aatccatcacccctgcacatgccaccaggactgcctggaccagagcccgggactctctga  
aaccactgagagctcggccctgggaatgggcctcccaatctcgtctccagggggtggg  
ccccaggtccctagtcttctcagggtcttctccactgttctgctcctctctgatacc  
cagttcttagccggggtgacccagcctcccgtaacagcctccttgggtggtgctggga  
agaagggggcccgtgtaccggcaggggccccccaggcaatg

>IGR3215a

ctgggaatgggcctcccaatctcgttctccagggggtgggccccaggctcctagtcttcc  
tcagggtcttctccactgttctgctcctctctgataccagttcctagccggggtgac  
cccagcctcccgtaacagcctccttgggtggtgctgggaagaaggggcccgtgtacccg  
gcagggccccccaggcaatgggcatgagcgcaggcagggaatccgtcagcctccaggga  
cgctctccctacagccccggcgaggggatcgggtcgtggcgacctctccagacgccagg  
ggctgggcaggagggcgggccaaggcccgcagggtgggggcccgaagccaggcgggcgcg  
gagtacgtgcggtgggctgcgggcggcatgaagggcgcgggcggccagctccggctccgg  
ctccggctccggctcccgcaggccgggtagcctgggcgttcccaggggtcgcagaggat  
ggcgaaacccggcgagccaccggagctggggaccaggacgcaggcaggcgtgtggagcg  
tgaggtggggacgtggcgggcgtcaagtgggcggagccccggcagcggccggaggcggga

gtcgccaaggaggaggcgccgagctgaccgggcgacgccgagggttctggaacgc  
cgggagctgcgagtgccaggtgagcgcggcgccgctca

>IGR3216a

ccggagctggggaccaggacgcaggcaggcgtgtggagcgtgaggtggggacgtggcggc  
ggctcaagtgggcggagccccggcagcgccggagcgagtcgccaaggaggaggcgc  
cgagctgaccgggcgacgccgggaggttctggaacgccgggagctgcgagtgccag  
gtgagcgcggcgccgctcagccgccagatcaaccttagcgctggggcgcgggctgggt  
cgccaggcggtgctgttctgccgcggggctgagagttagggcgggggccggatccgg  
ggccgggggtcgccgctagccgccagcgcagtcggggcgccaccctgcaccctc  
cgccctgtttctgacccgtctgggtcttctgcccggcgccgcaagccttcccagctc  
agggtggtgaggtcagcgcgcccttctgagtccttcggctgtcgggcggggtggg  
aacttgccgctcttccctgtcaggctcccgggaagtggcgccctgacccgggctgccg  
gctgttgggagcggggcgcgccgtccgctggccctgaggggctcttcatattggcta  
agccgttctgcaccctcccaagggtgggagtcctaggtcttgcgggcagggtccag  
cttggagcccattagatgggccattgagcagaaagtctt

>IGR3217a

tcaggctccgggaagtggcgccctgacccgggctgccggctgttgggagcggggcg  
ggcgtccgctggccctgagggcctcttcatattggctaagccgttctgcaccctcc  
aagggtgggagtcctaggtcttctccggcagggtccagcttgagccattagatggg  
ccattgagcagaaagtcttctccccagacatccttgggaaccagcgttgttttc  
cttggcagctcgggagaccgtgataatctgtaactaattcaacaaacgggacccttct  
gtgtccagaaaccgcaagcagttgctaaccagtgaggacaggcggattggaagagcggg  
aaggtctggccagagcagtggtgagcgtgtgctggaagggaatgcgggcagtggg  
tacttgtagagcactgactgcctccggccagaggacttccggaggaggtgacctatga  
gctggagtggtcagaggaaggctggcaaaaggcatcgtggacagaggaacagcctatgt  
gagtggnagcagagacctggccaatgccattccttatggccttgtagtggaagcaaggt  
gatggggaaggaaacctgtaggggtagctgtccacggacgctgtctacaagacctgga  
gtgagataacgtgcctggtactgtccctgcatgtgaag

>IGR3218a

gctggcaaaagggcacgtggacagaggaacagcctatgtgagtggnagcagagacctg  
gccaatgccattccttatggccttgtagtggaagcaagggtgatggggaaggaaactgta  
ggggatagctgtccacggacgctgtctacaagaccctggagtgagataacgtgcctggta  
ctgtccctgcatgtgtaagatgccagttgaccttcgcagcaggagcctggatcagggc  
acttctgcctcaggtattgctggacagcccaggtgggtccctggccttctattctatt  
tgactttaagatggtgcaggagaatacaaaaaactatccgggcatggtggcgcgcgctg  
tagtcccagctactcgggaggctaaggcaggagaatcgttgaaacctgggaggcagaggt  
tgcagtgagccaagatcgtgccactgcactccagcctgggagacagagcagactccatc  
ttaaaaaaaaaataaaaagagagatggtgcaggagagcattgggatccctcccaagact  
gtgactgttcttttctgtagagtgacaccgagatttgcttcttgataatagact  
acctggggcctcacagccccagccctctttaggaaatcctgtcctaagancaagggtg  
gagtcggttacgtttagcttggggcattctaaatgtcc

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

>IGR3219a

agagatgggtgcaggagagcattgggatccctcccaagactgtgactgtgtcttttgcg  
tagagtgcaccccagatttgccttctgataatagactacctggggcctcacagcccc  
agccctctttaggaatcctgtcctaagancaagggtggagtccgttacgtttagct  
tggggcattcttaaatgtcccagacttgggagatccattgtccacctagaattata  
ggatgttttggggtctgctgctgttctcagcctgtgtctcatctgacattaggtcca  
taatttagtctctgttaaatgaactaggatttcccttggctgtacttaaacgtccccg  
aggtgtccaaggtgcagcctctcactgtggttctgggcctcagcggcagctctctggt  
tgcttctcccactcacagaatgttggcttgaattctttttagggcctcctg  
ttcttacacagccgagtgctcactgtgtggccagccaatgaagccacgtagcaaggatg  
gagtgagttggctggggcctcatcccaaagatgctgtcactggatcaccttagttct  
ctgagagctcagcaggcagacttggtagacagcttagctgaggcattgtctgtggcatgtg  
ataggccctgtatcctgtcgaaagctctgcattggggta

>IGR3220a

cactgtgtggccagccaatgaagccacgtagcaaggatggagtgagttggctgggggccc  
tcacccaaagatgctgtcactaggatcacctagtctctgagagctcagcaggcaga  
cttggtagacagcttagctgaggcattgtctgtggcatgtgataggccctgtatcctgtc  
gaaagctctgcattgggtactctagacagtgttacttagtcaccggttagactggcc  
ccagctgatctcagttcatcccttgagtgccttctgcctgttggcttctgactggagcg  
tgcctggggctagaatgagggacgagagagagggtggcngaggcactattctgcctg  
tgggtagctcgtactctgagattgtgcttcatattggcagctggccatgtgccagggga  
ggagcccggctgtgagtgtcatcaaaggagagactacgtgggtgcagctctgaggaat  
gagtcggttagagggaatctagggtctcctcatttctaagaaggcctcccttttactc  
tgccctccacatccttgggagggctgagactggaagcaaggccttggctgatgtgtgg  
ccacgtggctgatagtgtgcagagggctaggaggtgtgtccctggctcctggggctgt  
caagagttactattatgcagatggaagttggcaggaaaa

>IGR3221a

gggtctcctcatttctaagaaggcctcccttttactctgcctccacatccttggg  
agggtctgagactggaagcaaggccttggctgatgtgtggccacgtggctgatagtgtg  
cagagggctaggaggtgtgtccctggctcctggggctgtcaagagtttactattatgca  
gatggaagttggcaggaaaagctgtgatgcaagtacatgcaagcccagcagagtgtgga  
gtgagagttaaacttcgggaaagttgtcacatctagcaatttggacatttgaagttcct  
tagggtaagacatcagcctgtcctagagcaagagggctggaaggtcctgtggtctgtgg  
gctttgtgttacggacatggaatgagagatagaagacagttttttttttttttt  
tcctcanagcagagganaatgaaaagtctggatgatttactggagccctanaananagtt  
ctgttcagctgggtgcattgcagggcanaaggattaagtgttgggtagagtgtctcca  
gtcagatggaatctatctgagcctggtaacaggccagcatctgtctggaccttcagg  
aagtgttgccttagagtgtggcctgtttgtacctggcactctgagggccagggtgtagt  
ggagatcctcaggcctgggtactttaggagcctggaatg

>IGR3222a

gcagggcanaaggattaagtgttgggtagagtgtctccagctcagatggaatctatctg  
agcctggtaacaggccagcatctgtctggaccttcaggaagtgttgccttagagtgtg

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

gcctgtttgtacctggcactctgagggccagggtgtagtggagatcctcaggcctgggt  
actttaggagcctggaatgagcaggtcagagcagatataagtacatgagttcctagagta  
ttggccaatccccccgccttttgcctagagaacattgcttgatgagctttagagccagt  
attgaccagttccagggttatccccctgatgatcaatgtactacattataacctgattccag  
tctctcctgaattaaatgtttcatttctgtggtgctcctggaacatggagatcgcccaa  
tttctgccttggttgcactcttactgttccctagctggaccttcttctcaccaggaa  
tcagctgacttgggctgggcagctggctgcctcaggtccactgatgtttctctggtgccc  
ttggtactaatgattgacataaattatgcctagtgcagggtacctgccaacatctgtca  
tcacattcagtcctccaacagccctatgagatataggtcctagtattgtctctattatat  
acatggggaaactgaggaatcctataactgtccaaggctc

>IGR3223a

agctggctgcctcaggtccactgatgtttctctggtgcccttgggtactaatgattgacat  
aaattatgcctagtgcagggctacctgccaacatctgtcatcacattcagtcctccaaca  
gccctatgagatataggtcctagtattgtctctattatatacatggggaaactgaggaat  
cctataacttgcctaaggtcacaaagccgggaagtggatagaattggggtttaactctt  
agtatgtctgacctagggcaggtgtgcctgtccattgactgtactgccttgcctgag  
ctggactggctggttatttgtgagtgctgtcatgtctaaggtaggagtactgcccact  
gaacttaagggaccatgttgcctgtttctgggtccatgttgcgttccctctggtgag  
atccagccaggcgtgtcatggacctgctttatgaacctttggtgaacctatgataaagt  
ccttaacctgggcaggcatgttcttctgggcaaagtgtggcttccctgtttgggagtcc  
attgcactttaaggtaacagattattgagtaggactggatagctgcaatatctagcagag  
tgtgttttgggtttgactcttgggtctgtcattgattgctgtcagatgtcagatatgta  
ggaaaccttctctcagcctcagctgtttgtcattgtatc

>IGR3224a

ttcttctgggcaaagtgtggttccctgttgggagtccattgcactttaaggtaacag  
attattgagtaggactggatagctgcaatatctagcagagtgtgttttgggttactct  
tgggtctgtcattgattgtgtcagatgtcagatatgtaggaaaccttctctcagcctc  
agctgtttgtcattgtatctatcttatactgaaatggaggtagtattctagcttagaa  
ggtttgggtgagaattagatagtagaaatgaaagattttggaaacaaatagtgttattc  
tcagactatgttcccaggaaacagcctgagacagagcttaagtacttaatgctttattgg  
aaggtgtaattgcagggcagccagggtgagggaaaacaaaagtgaggtgcaggcctgtgc  
gatggctcatgcctataatcccagcactttgggaggtcagatggatggattgcctgagg  
tcaggagttaagaccagctggccaatatggtgaaacccatctctactaaaaatacaaa  
aattagctgggcatggtggcacacacctgtagtccaagctactcaggaggctgaggcagg  
agaatcccttgaacctgggaagtggaggtgcattgagccaatattgtccactgcactc  
cagcctgggcgacagagcagactgtctcaaaaaacaaa

>IGR3225a

ggccaatatggtgaaacccatctctactaaaaatacaaaaattagctgggcatggtggc  
acacacctgtagtccaagctactcaggaggctgaggcaggagaatccctgaacctggga  
agtggagggtgcattgagccaatattgtccactgcactccagcctgggcgacagagcga  
gactgtctcaaaaaacaaaagaaaaagtgaggtataaaggaggatgggagggtggtgtt  
ttagcaagctggctactctgcacagagatgtacttgggtaccctatgagggcccttgggt

agccactggggaggccagtctgggtacttcaacagagtctggagatagtgagaggagccag  
agattctggcgtgggctggatagtcctccactgggctgaggcaaagtaataccctg  
ggacctgggagatgggtgagaccaagaggttgcaaggtgggacgtaagatgcatccaata  
tagtggtatatggattttatcctcaagtgtagttccctttgtgggttagtctcatccag  
actgccaagtcctgccaagactatgactgaaaaccaacttggcttttgcattgctcagtt  
ttaacagccttctctgctacttcattgtctagtactgaagcaagactttgtggtggtga  
tggtaccaggtggggaagtggaagtaaccactattcat

## &gt;IGR3226a

cctcaagtgtagttccctttgtgggttagtctcatccagactgccaagtcttgcgaag  
actatgactgaaaaccaacttggcttttgcattgctcagtttaacagccttctctgctac  
ttcattgtctagtactgaagcaagactttgtggtggtgatggtaccaggtggggaagt  
ggaagtcaaccactattcatgtaccagactgagaaagtatgtgtagatagatacagataaac  
atcttggctttattaggttcttctgtaaggagaatatttttcacataaagtagttgttg  
aagatacgaacctggcatggtgagatgaggctagagagggcagtagggcctggtcacac  
actcaaaaggacctttgggctaaagagtttgaactttatcttgacggcagtagagagcc  
aaaggagggtttgataaaccatgctggctacttttagagcagaggtgggaggaaggcc  
agatgacatgtggagaggccagtgtagtggggccaggatgcctgtagggaagttaggg  
gtggctcagatcagggtgatgactgaggctaaggagagtagggtagccccatacttgcc  
taggggtccgtggcagcagcttataggcctgaatggacatccatgtgcttgggtggcagg  
gtctcctggagcctctggatcctcttaggctgaacacaca

## &gt;IGR3227a

agtgtagtggggccaggatgcctgtaggggaagttaggggtggctcagatcagggtgat  
gactgaggctaaggagagtagggtagccccatacttgcttaggtgccgtggcagcagc  
ttataggcctgaatggacatccatgtgcttgggtggcagggtctcctggagcctctggat  
cctcttaggctgaacacacaggctccttcagccctgttatcctagagttggaggcagcgg  
ggagccgtgtccagtttaggtttcccccttcacagaaggcaggcaggttcttgttcagt  
ccaagcaagaccagtttgttctcagcaagctcatgttctgtctctaggctgttaataca  
ttgttaaaactcaggctgttgcatttgggttcagctgggagcttggcagagattctgcc  
tgatgaggttaaggagagaagctaaggacgctgctggttgcagctggaacatctttca  
tgccatttggccagattgtaaatgtctttccaaagtcaggttgggtgggacctctgg  
ttgtatgtcttgaattgccctgtgtttagaacagtgccagtcgcctgatgggtgaatc  
actgttgcctgggatgttggcaggtttgcaggacttctgtgggggtccaaactagg  
gctggcaggggccgtttggagctgtttgagaaggccctg

## &gt;IGR3228a

aaatgtctttccaaagttcaggttgggtgggacctctggtgtatgtcttgaattgcc  
ctgtgtttagaacagtgccagtcgcctgatgggtgaatcactgttctgggatgttggc  
agggtttgcaggacttctctgtgggggtccaaactagggtggcaggggccgtttgga  
gtctgtttgagaaggccctgcttgtttctttacattttaagcatatgataaaataatt  
ttaaaaattgctatagaatttctgtagaagattagagaaacaagcataaaaataaaaa  
gaaattatttccaagatatagccagatgtatgactctttcttgcattctctatata  
cacatatataatttttcttcaaaaatggaattatagagtcatattattggggcc  
cacttttctcacttaacagtatgcttagatctcttcatgttgatatatagtattcattt

taatatactccataaaaactcattgtatagaagaaatgtaaaatcttctattgtttagt  
ttcctaattgaacaagtctgtggtgaagtatttttgttgttcttggtatgggacag  
acattgttctaaactctgggatgcagcacagataaaaactcagtattggtttctgtca  
agatgtcactttgttttcataaaaagtggtttgacattg

>IGR3229a

cattgtatagaagaaatgtaaaatcttctattgtttagtcttctaattgaacaagtct  
gtggtgaagtatttttgttgttcttggtatgggacagacattgttctaaactctggg  
gatgcagcacagataaaaactcagtattggtttctgtcaagatgtcactttgttttca  
taaaagtgggtttgacattgttcacctccagacttattccagttggattctgagggttc  
tgggagggcttttagcagcactggacacttttaggggcactcagcaggtacacatactt  
tcacctactctgtcttaagcaagctgtgggcatagttatgagatgggttgaggttggcc  
ttccacattgtggggcacagtccctctcggatgctgcctcctcccaatctgactctaa  
ttagaggactttttagcagagccttttagttaagggggccaggcttgggagaaatggg  
gtagggtccagagtagccctgccagagatgtcagtgatgtggtagtctgggagctg  
ctgcttgaggtgcccagctctccaggctagcagagttagtatcccttctccaccag  
agcaagactttgcaggctcttggtaggttaagtcactgttaattacctgtattctttgag  
gtctgccccaaacccatctgtgattctttgaggctctgc

>IGR3230a

tgccagagatgtcagtgatgtggtagtctgggagctgctgcttgaggtgcccagct  
ctccaggctagcagagtttagttatcccttctccaccagagcaagactttgcaggctct  
tggtaggttaagtcactgttaattacctgtgattctttgaggctctgccccaaacccatct  
gtgattctttgaggtctgccccaaacccatctgtgattctttgaggctctgcctccagg  
ctgagattcaagaatgggtcagcttaagccagatgcacattccagagaaatcacagct  
ggtattcatgtaatgaagaacactggctttccctgagtggttgaggtatgaaccgtaga  
tgataggagcagaatgatttgaaggaatggacagacttctcctggaatttatctggc  
cttaaaaaggtatgcaactgcaactggagacacacctgggttagagatgctgggttccc  
actccaacctgtctggtttggaacctgcctgggccctgttctccaccacccagctc  
tgaggagcagtcagctggtcccttctgatcacagatacatcctccagctctatgttt  
cactgtccccctccatatacagaaggtgctgagcctgagccagtcaggccttttg  
aggaacaagaacagacaccaatcccttaggtataaggg

>IGR3231a

tggaacctgcctgggccctgttctccaccacccagctctgaggagcagtcagctggtc  
cctttctgatcacagatacatcctccagctctatgtttcactgtccctccctacata  
catacagaaggtgctgagcctgagccagtcaggcctttgaggaacaagaaacagacacc  
caatcccttaggtataaggggcttgtgtaagcaagagagaagccttctgaaatcctggga  
tagagaagacagtatagtaaggccttgagcagacctgtggttagaaccaggaggcctg  
gactctgcctcagggcaagcccaggcttactcactttcttctgatgacttgnctcttct  
gctgctctaaactccctaattggacccttagcacaatacgcctaccctgcagcaggttcc  
agggttgaagataattgtctgtgtgtcttgggacccccacacctagactatgacaggaa  
gactgtcagctctgcagacattggcataggcatgaacacatggcgcattcacttatgc  
tttcttctgatagaggatccatttgcagatgggagttgtggttggccttctctgagcct  
aacctggaatctcaatggattaggatttcttctgaaagagtaagatgaggaatggtgggt



gtgctgtgtgtctaataagatggcgggcaaaaaactga

>IGR3232a

tttggcataggcatgaacacatggcgccattcacttatgctttccttctgatagaggatc  
caittgcagatgggagttgtggttggccttctctgagcctaacctggaatctcaatgat  
taggatttcttctgaaagagtaagatgaggaatggtgggtgtgctgtgtgtctaataag  
tatggcgggcaaaaaactgatgaactggcattatcttagacttagaattctgtcagataa  
ggcttatgttttttgggaaagcatttgaattcctttgttttgccttgctttgtcttagt  
gaatttcatttgagcactccagtggggtgctcaaaagcanggcaggaagaagaccggca  
gagctggggtacagatgggtgctaactcctccagcacagtctaggctgcatggctgagctg  
ggagacgggtatcggaggcttctgttggactgaggttactgccagtggggttgtctc  
aggttgtgcctatttctgggctgatgagaagacagtagctggcccccttcccatgtcagc  
agcccagcctgaggtttggccatgtgtgccatattcattttgtatcctgagtgcctag  
atcagtgccctggcactgtcaggtcttcagtaaataattgtgaatgaatggtgacgggcca  
gtgagaacagtgctgccaaaggagccttactacaggaaga

>IGR3233a

ctgatgagaagacagtagctggcccccttcccatgtcagcagcccagcctgaggttttgg  
ccatgtgtgccatattcattttgtatcctgagtgcctagatcagtgccctggcatctgca  
ggcttctcagtaaataattgtgaatgaatggtgacgggccagtgagaacagtgctgccaa  
ggagccttactacaggaagaacactgtctacctaggagactgtctcctctgactgctctt  
tctctggcaggtgcagactgacaagggttagttttattcctcttctggctggccatctgt  
tgtacaccttagtttgggtgttggtactctggaggatattgtgtcaattatctttctgt  
tattgtctctcatgtactgttgcctccttgtgggcagggactggttcccaaaacctggc  
actgtcctggcatatgtgttggaaggtgaagatagaacaaacagcagctctgtgaaataag  
aaggagtgggccagaatcttgactgacagaccattggaacccgagctgactgtaccca  
ctgcgattccgccttctcatgttacaggtggttgcctgggagttgagaggtgggctctct  
ccgcagggcacgtgacttcccagagcagggaccagaattgagcacacatcactggctgca  
cgctcttcttcttctgctgtttgtccttttagcttct

>IGR3234a

ggactgacagaccattggaacccgagctgactgtaccccactgcgattccgccttctcat  
ggtagagggtggtgctgggagttgagaggatgggctctctccgcagggcacgtgacttcc  
cagagcagggaccagaattgagcacacatcactggctgcacgctctttgttcttctgct  
gtttgtccttttagcttctgtgtgctaggccaggattttgatatgtttgattatctgca  
tatgtgtgtacatgcctatgtgtctcctcacctaaattagctttttcacttnttgatc  
cagtgttgcattgaatgcctttcagacacttccctctgtgacctgaaactctgggtg  
tctgcattgctgatggcctggttgggtgcctgagctgtgtgcaggccgaattcttcacc  
tctattggtacgtgccaacaggactgtcgtctccctgacacctgnctcacatgccacgg  
atgtctctggctgcagcctgttctcatttagagtgggatagccttaactactggttttgg  
ccagtctgaggagagtggaaactggcagagttgctgttttccctataagatccaatga  
tctggatgttcaggagccagatgtctgaattgggtcttcttctcctgggaagtgcaggct  
gcacttgggctctctggtcttttgaccaccttgcceatg

>IGR3235a



aaaaatggaactatacatataccagggcatgcaaactcagttgcttggagggacaat  
gaatttacaagtgtcaagtggtgggctggatgggtggggccagggaagttggggagcataggt  
ctgatctaaattcattcctattcatatgtttacaacaaagcataatctgttgtagatt  
tgtgacagaagaaaaaattctgtgaattctcagcttctttatatgccattcaatgttct  
tctgcaacatgatfttaattggctggatgggtgattacctgtcagatgggtgataatctgtca  
tactgataaactgtcaaatgggtcaagtcattggatatgggatttttctgaattatca  
gcacctttttacataatttcttgggtgtatacttctgattacttttttagggtaagttccta  
gaagtgataattaccgatgagagtggaactttttaaagctttaactatacttggtgct  
tttattgtgataatacttttatgccctaataacttttctg

>IGR3239a

gggtcaagtcattggatatgggatttttctgaattatcagcacctttttacatatttct  
tggtgtatacttctgattacttttttagggtaagttcctagaagtgatattaccgatgag  
agltgtgaactttttaaagctttaactatacttggtgctttattgtgataatactttt  
tatgccctaataacttttctgtcaataagaagagatggtagcgtgggcctggaggtgggct  
ctcctaactcctagccctgggttagtccctggactcactgactttttttttttttt  
tttttttgagactgagctcactctgtcaccaggtggagtgtagtgccgggatctcgg  
ctcactgcaacctctgcctccgggttaagcaattcttctgcctcagcctcctgactagc  
tgggactataggcacatgccaccatgccagctaatttttttggtatttttagtagag  
acagggttcacatgttggttaggatgttcttgatctcttgacctcgtgatccacccat  
ctccacctcccaagtgtggtgattacaggtgtgagccaccatgccgctgcctttttt  
tt  
agtgacagnggctattcacaggtgcgattgtagcacactgc

>IGR3240a

ctaggatgttcttgatctcttgacctcgtgateccaccatctccacctcccaaagtctg  
ggattacaggtgtgagccaccatgccgctgccttttttttttttttttttttttttt  
nnnnnaaggacaggtctcncatnttancctanactggagtgcagnggctattcacag  
gtgcgattgtagcactgcaaccttggactnctggcctcacgtgatcctcctgcctcag  
cctctgagtagctgggactataggcacagtgccattgtaccagctnttactgcctnt  
tttcentgagctgngagtgtgattaacttcanactagctgtctctctggtganacatt  
ttancccatgtggccanactgggttgggcctgggggcaggggtggcctctgganagggatt  
ggtagctcanccaggtggagctgtgcccagtgagctcactgcctccanaaaccacggn  
tgctttccanactcccgcctntccgctgggcctgcagctcgggacaggtgttctgc  
ctgcacggnaggagactaagcctaccagatgacctcctctccaatcttgttctcaca  
ccctacactccaccatcatntgggtcctttgaaaacctnntgattacctggaaggagat  
agggcagggccagagaataattggtngnnttcactctga

>IGR3241a

ctntccgcttgggcctgcagctcgggacaggtgttctgcctgcacggnaggagactaag  
cctaccagatgacctcctctctccaatcttgttctcacaccctacactccaccatcatn  
tggttctcttgaaaaacctnntgattacctggaaggagatagggcaggcccagagaataa  
ttggtngnnttcactctgactttgagttcttggccctgaaacgagcagggcctgctgac  
agtgtggcttttctggcagcatgttcccctactcccacccaccagattntaaactctt  
tagagtccctgacatgtagctatgaagacaaggaaggcagggttacagcttcttggtcc

ctgtccccagttatggctgaagtggatgttaggtctgaagtcataagggtggcagtggata  
cagctactcttgggaagaggttggggaaggaatggccttgtgttccccctcacttctc  
agcttagaggcagaattgaaggccctaagtcagcctgggaaggcttggctcccacctggg  
attgtaggaggtacacatcttactttacagctagggcttggagtcccagaaaagcctcct  
tggagtacttctgtgtgcaaaagctctcccacgcttcaggctgtgttcttgagcaccata  
actggagagcccatgccctgaactcattgaaggtctgagt

>IGR3242a

ggccctaagtcagcctgggaaggcttggctcccacctgggattgtaggaggtacacatct  
tactttacagctagggcttggagtcccagaaaagcctccttggagtacttctgtgtgcaa  
aagctctcccacgcttcaggctgtgttcttgagcaccataactggagagcccatgccctg  
aactcattgaaggtctgagtgttgggagtagcagaggagaacagncccaccgtgtgtctt  
aggggacggaccttgtgtgttgggtgcaacccaccttggcttggcctgtctaggtgg  
tccttcagctgtcaacctagggggagggggatgacttcaggactttcaccatcaccttt  
ctggatgataagtccagtggtcagtaatgagtggccagctcggcttcattagttaactg  
tcattgtcccttggactcctcaacttgaaatgtgtgctggaagtctgtgttacctgact  
agcccaattaccctggatcaaggttttccatgggattattttccactgagtgttgaca  
gttcttctgagtcctctccctgtcttctcagttaccctctctatcctctgtttcttc  
tgtctccaccagctctgactgaatgatttggagccaagacttctggactcctaaatatta  
accaatatggggggctgcttctacttagttccaaagagca

>IGR3243a

aggttttccatgggattattttccactgagtgttgacagtcttctgagtcctctcc  
cgtgctcttctcagttaccctctctatcctctgtttcttctgttccaccagctctgact  
gaatgatttggagccaagacttctggactcctaaatattaaccaatatggggggctgctt  
ctacttagttccaagagcaacacaggcagtaggtatggtaggagtaagaaaggaaaag  
tccccatagactggagtcacagggacaacttctgttgggaagggggcaacagccttga  
gggaggggggcggggaatttccactagccagagaccctcttgggtgcctctctgtgtcc  
caagtggaaattctgccctggatcaagggtaatctcttgttctgactctcatttgaagg  
ttttatcgccaacctctctgtgcagcggcagttcttcccactgatgaggacgagatagg  
agctgcaaagccctgatgagacttcaggacacatacaggctggaccaggcacaatttc  
cagaggggaacttccaggttaactcaccactccaggcgttgcctgtcccgcntgtgtctct  
ttagtggcgggacaggttggagccaccaccaacttgtggcctttaaactcgggtgcacct  
ctggtgcacctcttggctcaccagtttgtgtgactccc

>IGR3244a

gacttcaggacacatacaggctggaccaggcacaatttccagaggggaacttccaggtg  
actcaccactccaggcgttgcctgtcccgcntgtgtctctttagtggcgggacaggttgg  
agccaccaccaacttgtggcctttaaactcgggtgcacctctggtgcacctcttggctca  
ccagtttgtgtgactccctctcccatgacaggttctccctcagcccctgccctgcca  
cctccctccatgtattagccaaggccctctcctcttgcactcagagaaagccaaagtgtg  
ctgtcaggaacccccctccacgtctgtccccagagcaccacacagatctgcattcagacc  
tgcttctgtctcccacctccaatgtcttttcatctaaggctgatctgggcttactatc  
ccccgtcttgagtcctcttagttacagtctctgtcctatacattctgtctccacctct  
ctgggttctacccttgagctcccatataggctctattcttgcctcattttaaacttgcct

ccctcggtatctgagagctttcagagcttttgcgtgctgattcatctcttctccccctctg  
gttaggctactggatagagtaactacactctgtccatttctggtcccatatactcc  
tgaactcacagtatctggccttttccccactgtcactga

>IGR3245a

cccatataggctctattcttgcctcatcttaacactgcctccctcggtatctgagagtct  
ttcagagcttttgcgtgctgattcatctcttctccccctcctggtaggctactggatagagt  
aatctacactctgtccatttctggttcccatatactcctgaactcacagtatctggcc  
ttttccccactgtcactgatgctgttcttacaaggctcatcagtgccngcttggctggta  
aaccagcgaacaagggtcacacataatgttctttaactccagcagcatttgacagat  
agattgcctcattcttgtgatgttctctcctccttgaattctggcactatgatatctg  
cttctcttttagcctctctggctatttctctcaagtggccccctccccactgactccc  
agtgtagtggttataagaagatgtttgagggctgctggagacaagtaaccccagcgat  
tactgtgtgaggtcatgcagaccagcttattccagctccagaacctcagctgcccc  
tttagactccattagagagagggcaggttcagggcacctgcaagatctgttactctgtag  
ccttgagattggtgcttggaggagggaaccataccctggcgttgacctctcacgttcac  
tcagcaaaccatgagtgctcctgaatagggttatggggca

>IGR3246a

agaccagcttattccagctccagaacctcagctgccccctttagactccattagagaga  
gggcaggttcagggcacctgcaagatctgttactctgtagccttgagattggtgcttgg  
aggaggggaaccataccctggcgttgacctctcacgttactcagcaaacccatgagtgtc  
ctgaatagggttatggggcagaaaggaattactccctaggactccatccttacctcatct  
tctccctgagcacctccccaggtgagcacagccatttccatcacctgaggtggatgaca  
tccagatctgtgttcttggcaaggctgtctccgagcttctaaccagtgtagacggat  
gcctttgggacatctgtactgaaatgtcccatggacttctgaacttcattgtgtcctgaa  
ctgaaatcctcatctccttgaacactttacctccccctcatccttctatctcagcaa  
aaaggacctccatcctctggctgcctaagccagaagcctaaggcctatggattctacctc  
cttctctcatgtcttccgtgcttatccccctgactccagcctcacagctactttttctca  
atttgattatcaaaataccattctgactgtctcctacctccagcttactgcttaagacc  
atcctccatgtggtcttaagcacacattgttcacatgag

>IGR3247a

ctgcctaagccagaagcctaaggcctatggattctacctccttctctcatgtcttccgtg  
cttatccctgactccagcctcacagctactttttctcaatttgattatcaaaatacca  
ttctgacttgtctcctacctccagcttactgcttaagaccatcctccatgtggtcttaag  
cacacatttgttcacatgagttcctgattactgtgcttaatttccaaagctaaacccaaa  
ctctcctgtgtgtggtctttggggctcctgcatgactccatttctggttcccttggcc  
attgtactcagctttccctatcactcagctcttttgtctcaacccctctataggaatacc  
tttaccatgtcagctaggctactccatgtctgattgcctatcagcactcagctcagctg  
tacttccccaaatgctctccaggagtagacattcgagttggctctggggaggatgctg  
agtgccaggggagccattcttagcattcttggcatctgggagacatgttgataatagctac  
tggtcattagcatcctggggagcataggagacatctcatatgtcatcttattgaattct  
tgccacaagctctttaaattgatgatattatcttatttagagataaggggactgagac  
ttagatatggtaactgtctatagtcacacagctggttgg

>IGR3248a

agcattcttggcatctgggagacatgttgataatagctactggtcattagcatcctgggg  
agcataggagacatcttcatatgtcatcttattgaattcttgcacaagctctttaa  
tgatgatattatctttatttagagataaggggactgagacttagatatggaactgtct  
atagtcacacagctggttggcgccctagtaggccaacacaaacctagttagttcagct  
ccagagccccagctcagtcagctatgttactctgccccagcaatgtaggttctgggcct  
gcagagccagaggagacctgtggagaaggaaaaggggctccaggagccccccagtcctg  
gcctacctagggacttcattgtgttactgtcccaacttctattctcgttattgg  
ttctgagccaccggggttagcagacctggtctctgaagcatttagcctactgttagt  
ggtttcattccaggcagaaagagccttctctgagttctttgtgtcagccatgccaggt  
tgctgttaatggggctgtggggagtcttctgcttccaggagagtcacagccccac  
tccccctccatggtatctgctttctcattattctctgaggaaccacacatatgtcttc  
ccatcttgagctcaccctaaatctgcatctccctatagc

>IGR3249a

gagccttctctgagttctttgtgtcagccatgccaggttctgttaatggggctgtgg  
ggagtcttcttctgttccaggagagtcacagccccacttccccctccatggtatctgc  
ttctcattattctctgaggaaccacacacatagcttccccatcttgagctcaccctaa  
atcctgcatctccctatagctgcttctcatattggcttgaaactatcttcatggtcact  
ttccagcactccctctacagcagatgaccttgggtcataagaccactgaactgatactc  
agcaaggctccctgccacttaacagccaaagctggcactgcaaccttggctcttggcctcc  
cttggtgtctctcacaccactcccgtccctctgtttctcctatcttagttcattctca  
gggttattcattgtctgttcttctgggtagggtgctccctggagctctggccttagtcat  
cttctccattcttctnagagtctctgcaagctatttctcaccatggcttgggtgc  
cacctaaatttatgtttttatattcagctaattttccatcctctagactcatatggca  
aactgccaccagacatcttcttctgtggtccacaggaccttcccactgtcctcaaca  
atgcttctggtgggttctggggctccccctaaaaaggc

>IGR3250a

agtctctgcaagctattttctcaccatggcttgggtgccacctaatttatgttttt  
atattcagctaattttccatcctctagactcatatggcaaaactgccaccagacatctt  
cttctctgtgggccacaggaccttcccactgtcctcaacaatgcttctggtgggttct  
ggggctccccctaaaaaggccccctcccacttgggagatggggaatctgaggctaagagg  
tggtgtgaacccagtcaggggcagggtgggccatctgtctgtgctcactgtgtcagt  
ggccctttaggatatgcagtctaaatgtccgatggagtctgcttgggtgatccccctat  
ccagtggctcaggcttcttgaagnnggaatcttctccctaatccagaggctctttgg  
agcctgacaatttacttcccctgctgtaggaaccaagtaccaggcaatgctgagtgtgga  
tgactgcttgggatggccgctcggcntacaatgaaggggactattatcatacgggtgtg  
tggtggagcaggtgtctaaagcagcttgatgccggggaggaggccaccacaaccaagtca  
caggtgctggactacctcagctatgctgttccagttgggtgatctgcaccgtgccctg  
gagctcacccgccgctgctctcccttggttaaggagattc

>IGR3251a

ctcggcntacaatgaaggggactattatcatacgggtgttggatggagcaggtgctaaa  
gcagcttgatgccggggaggaggccaccacaaccaagtcacaggtgctggactacctcag

ctatgctgtcttccagttgggtgatctgcaccgtgccctggagctcaccgccgcctgct  
ctcccttggttaaggagattctaggggaaggtaagatnggaatggagagtgganaggaac  
tgcactgtgctggcatctgcctgacctctctctgggactgagtcagttaccctgtcac  
ttggccagtactaatgccttactgactttaggaccagtccagcttcttactagctcctt  
accacctcaatcctggccttaggtttgcgcagtcgctgatagtacgctcaggcctgtg  
gcacttgtgggccttttaataaggactctgttatgggtatctgtcaccatgcaggact  
acacaggggtggaacctttactacatcaggagcagctcaggagtgcaggtgtactttagga  
ttgttacagtgacaaacagtagcgggtctattagaggcctgaggctctaatagtaggactt  
catatggcattgatactttgtgtgccttgtgctgttggactgaagaaggccaaaagcact  
gtgcctttaaactcatctaccttttttttttttt

#### >IGR3252a

tacatcaggagcagctcaggagtgcaggtgtactttaggattgttacagtgacaaacagt  
agcgggtgctattagaggcctgaggtctaatagtaggacttcatatggcattgatactttg  
tgtgccttgtgctgttggactgaagaaggccaaaagcactgtgcctttaaactcatcta  
ccttt  
acgatctcagctcactgtaacctccgctcccggttgatgagattttcctgcctcagcc  
tcccagggtgctgggattacagaggcacatgccccatgttgtattttcttttagtagagat  
gaggttttaccatgttggctcaggctgggtctgaactcgtacctcacgtatccaccgc  
ctcggcctcccaaaagtgtgggattgcaggtatgagccaccgcacctggcctctgttggt  
ttccagttacgaccagcgtactctggttagatgctgtggaaggtagaatgcagcatgca  
ggtgagctgctgggagagaaaccttacagaataatttctctaaatgacctaacagatgt  
ttgtggtttccttttcttctcattccttgcattttctagacccaagccacgaacgagct  
ggaggggaatctgcggtactttgagcagttattggaggaag

#### >IGR3253a

actctggttagatgctgtggaaggtagaatgcagcatgcaggtgagctgctgggagagaa  
acccttacagaataatttctctaaatgacctaacagatgtttgtggtttccttttcttc  
tcattccttgcattttctagacccaagccacgaacgagctggaggggaatctgcggtactt  
tgagcagttattggaggaagagagagaaaaaacgttaacaaatcagacagaagctgagct  
agcaacccagaaaggcatctatgagaggcctgtggactacctgctgagagggatgttta  
cgagagcctctgtcgtggggagggtgtcaaactggtgagatgtgtgagggggctagggtg  
ccaaagctgtggacctggactctggctctgggcaggcagatttggggaagggtgttcttta  
ttctgtaggtacttttctcagtatatccccagttttcatggcatctcctgaggctgac  
atgtggatatttctctgaggtgtaggaaaggagactctctccctcgtgccccaggttagag  
tgttgcctcttaagtaccagtgcctccttaccctaataatgtcccactttttg  
cttcactcactgttgggaagaaaacaatgggtggacgtacctcaggcccaaaaagaagtc  
atggtataagtggagagtaagctctgtgtaagacacc

#### >IGR3254a

gtaggaaaggagactctctccctcgtgccccaggtagagtgtgtcctctaagttacc  
agtgcctcgcctccttaccctaataatgtcccactttttgttctactcactgttgggaag  
aaaacaatgggtggacgtacctcaggcccaaaaagaagtcattgtgataagtggagagtaa  
gtctctgtgtaagacaccagcgtgtactagagcttggtatcgagcctttgagagccct  
gggatcctagtgtcctctgaggaggcccaggtgtgacaggctctgagccttttccatgcc

cctgtctgcatggcttctactggctcctccaccaagaaaggtttctcccctgtcccagcc  
cttcagacctactcaagcttcacgaaaagggtcaggaattactttctgcatgggactt  
gaggatgtgaggtgatttgggagagaagaaaaattgcatgatttgggggtgtatttc  
atgccagttaagctgaaggggtctcctctcctcctccctccccccattccccctctcc  
tccccccccctccccctccccctccccctccccctcccccttctcctctctctc  
ctccccctccccctcccccttcttcttcttcttcttcttcttcttcttcttcttct  
nnttttcttttnttttcttcttcttctcancctgtcg

>IGR3255a

gctctctctcctctccccctccccccattccccctctcctccccctccccctcccccc  
ccctccccctccccctccccctcccccttctcctctctctcctccccctccccctccccct  
cctttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttctt  
tcttctgctcancctgtcgcccaggctggtgtgcagtggtataatcatagctcactgca  
gctttgacctcccagccttgagcaatctcctgctcagctcctgagtagctgggacta  
caggatgcaccatcatgcctggctaatttttagagacaggctctatgcatctaggctg  
gtcccaaactcctggtctcaagctatccttggcccccncagagttctcgattacaggca  
tgagccactgtgcatgccacctgctgggacttttgtttctctgtggtgtggtgggag  
ggagcagctgtgcccagtgaggtgagtcagtgctgcagacagccagactgggaccgag  
gattaggactcactcagctcagggcctgttactctgtgcttccagacaccccgtagaca  
gaagaggttttctgtaggtaccaccatggcaacaggggccccacagctgtcattgcccc  
cttcaaaggaggagcagtggtggacagcccgcacatcgtc

>IGR3256a

ggtgagtcagtgctgcagacagccagactgggaccgaggattaggactcactcagctc  
agggcctgttactctgtgcttccagacaccccgtagacagaagaggctttctgtaggt  
accaccatggcaacaggggccccacagctgctcattgccccctcaaaggaggagcaggt  
gggacagcccgcacatcgtcaggtactacgatgtcatgtctgatgaggaaatcgagagga  
tcaaggagatcgcaaaacctaaagtaggtgtcactgtaggtccttctcgggtcactgaag  
ggggaaggctcttttctatcccttagcactatgggtggttgggttggccatctagccac  
ccttatccatctatagcatgggcctaccgtggggatacagagatgcttcagactcagcc  
tgacctgtgagttcatggtccagtggagaagaacagggttaaccaatgtggacagccaa  
gtgctatcatagaagggtcacgctgggaacagggcaggtctacactggtgtgtcagttcac  
ctggttgggagactggtgcgtgggtgagtttttgaaatgttccataggatgctatgaa  
gctgggtcctgtggagctcctgattaggactgtaaatgaggtgaatgacttagaggagaa  
tgtatatctttataatattgggtcttctcatccaagggca

>IGR3257a

gctgggaacagggcaggtctacactggtgtgtcagttcacctggttgggagactggtgcg  
tgggtgagtttttgaaatgttccataggatgctatgaagctgggtcctgtggagctcc  
tgattaggactgtaaatgaggtgaatgacttagaggagaatgtatatctttataatattg  
ggtcttctcatccaagggcacaggtctctccatatcttttaagttttctcatata  
agccttgaacatttctaagtttattccttggtagtttcttgttactgttaatttactt  
tatttctcattatttttaactggttacatttttattagtttactattatatgcc  
aaactattgattttacaaatacattcatagtaagagctaattgttactgaattcttaac  
tgtggcagggaacttctaagtgcttaacatatattaagtggtatgtcacagttatgaac



agctgctcataatgatgtcactgtctctgttttacctatgaaaaagcaaactcatacaga  
ttgcagctagtgggtgaatttacttattctttttggttttagctgatttctcttgg  
ttgcctggatagcattaacacctggaaataaggaaaattttatttctcctgatacttgt  
agttcctttgttttataaccttattgaattgccagaac

>IGR3258a

ctgtctctgttttacctatgaaaaagcaaactcatacagattgcagctagtgggtgaatt  
tacttattctttttggttttagctgatttctcttgggtgcctggatagcattaaca  
cctggaaataaggaaaattttatttctcctgatacttgtagttcctttgttttataac  
cttattgaattgccagaacttctagagcataattacgtagaataggcatccttgtctca  
ttcctgaatttctggaaattcctatggattttactgctaagaatgcagttggctgtg  
gtttgtatatatgccatgtttaaaattattctctgtttctagttcataaaagatttg  
ttcccatgtgacatcttcaagagacctatttgcctgcatatcccatcactgatgatt  
gggagggaggatttagctcatttctattgtctgtcctaataagaattgtaggggccg  
aggtgaccaggaggcccgacactcatggagagacctgaaataggttcctatcctggcccc  
tggacctcatctggaacagcttggcttgaggtactaggacatctagggtttgagta  
gtggtggcatcatgatgtggctgaggaagggggctagccagatatggagaatgggg  
actaggactcccccttctactcagctccagagtcctccag

>IGR3259a

actcatggagagacctgaaataggttcctatcctggccctggacctcatcttgaacag  
ctttggcttgaggtactaggacatctagggtttgagtcagtgggtggcatcatcgatgt  
ggctgaggaagggggctagccagatatggagaatggggactaggactcccccttctac  
tcagctccagagtcctccaggaaagaaaactactttgttgggtgtgccaggatttctga  
gagatttctaccgttcttcagttccagacactgagaacatttctctgtcatgtgtgc  
atatgtgtacacatgtgtgtggctggccagnnggtagtgtaggaaaagatatattgaa  
tagaagccatgcaaagagccaaacaaggttggcaaacatgtttggctcttaacatggctt  
ctattcaaagataagctgacctctcttccggagactgtgaggacagatgctattctg  
gctttgaagtagagccaatgagcttaacttggcctgtgggaatgcctggcagctgtctg  
tggggctcttggcctgtttcaaaatagccctgtgttccctggggcagagcacagctg  
ctcagagcctctttgtgggtgtcaggccaatgctgaggcacagatgtttgatggggctt  
ggctgtggctgcagttttagggagggactgacatgagct

>IGR3260a

agcttaacttggcctgtggggaatgcctggcagctgtctgtgggtctctggcctgctt  
caaaatagccctgtgcttccccctggggcagagcacagctgctcagagcctcttgtgggt  
gtcaggccaatgctgaggcacagatgtttggatggggctgtggctgtggctgcagtttca  
gggaggggactgacatgagctgaagctcaggaagggccatgagtaggagcttgggagccgt  
ctgtcctgctgtgtggtccatcttaccagatcatgccatagcagcacagtgtccaagt  
gtccatctcacccttactagccttctgttccatctactcctctccatcccttctgcc  
accacctggccggggccaccatcatcttggcctgacctctgtctggcctcactagcc  
tccagtcacctctgtggccctcattagtcactctccatgaggtattcacagtatcc  
attttacattcacattttagtgtccctccccctgcataaagccttccccatttctgttg  
gccacaaggttgcactatgttccatagccctgctgtctcttcagcctgttctctcttac  
tattcccataacctttaatccacacctactgcaacacctatttccattcccaggcctct

ggattgctgctctttccctgttctgtaatgttctctac

>IGR3261a

gtgtccctccctgcataaagccttccccatttctcgttggccacaaggttgcattagtagt  
tcttagccccctgcttgcctcttcagcctgttctcttacttcccataacctttaat  
ccacacctactgcaacacccattttcattcccaggcctctggattgctgctctttccctg  
ttctgtaatgttctctacttggataactcatgttaacccttcaggcctcagctagggtg  
gtctctcccttaggaagctattcttgacactataccctnagcttccanaggatggtaag  
ttacccatgctgtgctgcagttacctgactggtttctgcttccccacttgactgagt  
tgaagagtgagggggccatgtctcagttacctagcatagtgccaggcacaaagtaggca  
ctcatcaatattattgaaatcaaggggaagtgtgtgggggtgggagtagctgggcctat  
ggccccacccatgtgaggtaggagacagtcacagctgaagcacatggacctttgccat  
tgttggctggctctggggcgagctcccccttgggggttactaagcctaactgtggagg  
ctgggggagatgaagtagatgcaggagtgcatgtgtagtgtagctgtatgagtgagg  
ggctccaggcagtggttcactattttaactacagaat

>IGR3262a

atgaggacagtcacagctgaagcacatggacctttgccatgttggctggctctgggcgg  
cgagtcccccttgggggttactaagcctaactgtggaggctgggggagatgaagtagat  
gcaggagtgcatgtgtagtgtgtacctgtatgagtggtggcttccaggcagtggttca  
cttattttaactacagaatctttctggtttatcatctgacttgaaggatcccaag  
ggagcgaaaactgtgccatctgtcttcttggagctgtgggaaccagtgtaggt  
ggtagcagcaggagagtggttggatgggttcttggcagaggagcccactgaggttcggaa  
ggatggtggaacttgactcaattgagagaagtagcataaggcggaggctcaggcatggtgg  
cacagctgaaaatggtgggagtagtaagctcaggcaggctgtgctcaggcagggtgg  
tatgtgggcctggcaaggaaagggttagtcaggcagatgcatgggtagacaaggcaggc  
ataattctgcaggcaaaagcggacctggggaggagaaggatgagcagtgaccgagcagg  
caatagccagnaactgattgcggattgggaatgtggaggcctcagactcttgcctcaac  
tggcctgcaggatcttggggccttggctagagccattggc

>IGR3263a

aggggctagtcaggcagatgcatgggtagacaaggcaggcataattctgcaggcaaagcg  
gacctggggaggagaaggatgagcagtgaccgagcagggaatagccagnaactgattg  
cggattgggaatgtggaggcctcagactcttgcctcaactggcctgcaggatcttgggg  
ccttggctagagccattggctgcaaagcttctccactagcatggcagtaaatctggtcc  
cagtgctcttgggaaaatattcaaggcaaaacaacaaacaaatcaagcttccc  
tctctcttcttctagcttgacgagccaccgttcgtgatcccaagacaggagtcctc  
actgtcgcagctaccgggtttccaaaaggtaagcaaaagcagggttcgtagctgctc  
aagcccaacttcaggacttctcagtgccctaccctagggatgggtggcttgcctttct  
gcctgctggcacctctcacccttgcagcaggcatctgtactgctgtcatgctgg  
ccctgactctggggacagagttcaggacctcatggaagcctgcccttccgtcttcttc  
tctgccctttcttttggccagctcctggctagaggaagatgatgccctgttggcc  
cgagtaaatcgtcggatgcagcatatcacagggttaacag

>IGR3264a

ccccttgcagcaggcacctgtactgcctgttcatgctggccctgactctggggacagag  
ttcaggacctcatggaagcctgccctccgtcttcttcttgccttttcttttggc  
cagctcctggctagaggaagatgatgacctgttggcccgagtaaactgctggatgca  
gcatacacagggttaacagtaagactgcagaattgtacagggtacagatgtacctgg  
gactgtaggagttgggaagtgggtatttggctagatggctcacagggtgtccagaac  
tgggccaagaggcccaactgtatgactactgcctgatgctatgaatatggagtgatctca  
ttttaggaaaccagaattaatcatgcctgctggcttcaacaattagtgttcaacaaata  
tctattgagcatctnctgtgtgcccagtgtgctgcaagctagggatcaggggtagtat  
ggtaggttcgttcatgtcttcttgacaacagaagctcaaatcctgaatggctcaggac  
atctctaagagagctaaaaatgacttcagaggccatggttctgtgtcataatcaataca  
tttgaaggtcaaatgttctgtgtgttttctcctgctgnaccacaactgaagtgtcca  
aaagcagcagcaggggacttcccatgagggactgccaaga

>IGR3265a

cttgacaacagaagctcaaatcctgaatggctcagggacatcttaagagagctaaaaa  
tgacttcagaggccatggttctgtgtcataatcaatacattgaagggtcaaagtattct  
gtgtgttttctctgctgnaccacaactgaagtgtccaaaagcagcagcaggggactt  
cccatgagggactgccaagatgggggtcagttgagaattcaagaaagcggcactaaacc  
ctgggtcttcagccacagcatttattagggaaactgcagagtgggctgcagcaatctc  
aaaatggacagcaagagacaagaattgtttacctaagtattccacagtgaggagtgca  
gagtgtggagtattttaggggttagggaaattggttcagggtggggctagtttctt  
cagtgttatgggcaacaacctaaacacctcatcagtgctgggaatgttgaagactcca  
gcttgtgtccagcctgaagggaaaaacctgcagctggctgggtcacagagctgtcaagg  
gagtctgatttcagtcagaacaaagaaagggcgggtgggtctgggggaccttaca  
ctgtgatatgtagggtgaagtgtgagggcctggactggttaagctggtgcaggtggaatgt  
tcttgtccaagtactcccactgggacctgggttctgcc

>IGR3266a

ggaaaaacctgcagctggctgggtcacagagctgtcaaggagctctgatttcagtcaga  
acaaagaaagaaaggcgggggtgggtctgggggaccttacctgtgatgtagggtgaag  
tgagaggcctggactggtaagctgggtcaggtggaatgttctgtccaagtactccac  
tgggacctggcttctgccttattcagaggtgatttgaagaaatgtggcagcacct  
gctgaaaggtttgggtaagctccttattaaagtatccttgggtaagcttagtaaa  
gtgtcctcttgggtattgagtcacaaatcagcactggctatgtccctataaatattgga  
acttctgtgttctgtttaaattgatgacctgagacacctcagagaagtctactggc  
atcttctagaggcctctgggtctctctgttggccaaagttctgtatacttaagata  
gcagcctttacctttaggattggcatttgggtctgatctaccatagatctcattagaata  
ttgattaaagatcatttggaaaagattttgaacttttgccttgacacgcctaagcaaa  
tcagccttcttttgttgttttctgtgtagctgcatcagcaattggaaaatcaattt  
gaaggtcatctttatggattggtgtgaagtctaccagagt

>IGR3267a

tggcatttgggtctgatctaccatagatctcattagaatattgattaaagatcatttga  
aaagatttttgaacttttgccttgacacgcctaagcaaatcagccttcttttgttgtt  
tttctgtgtagctgcatcagcaattggaaaatcaatttgaaggtcatctttatggatt

gggtggaagtctaccagagttttaaaaagcatactgattacctgcaaatagtactgtga  
aatTTAATTTTTTCAGTTCAGCTCAACTAGTGTGTAATTTAAATAAATTC  
TGCAGATAAGCACATCCATGGAGGACTTCTGCTCATCTCCACTGCTGCGTATGTGA  
AGAGCACCACCATTCAAGAGTGATAGGCACCTCTGATGTGCTAGATGAGTCCCTGTTGG  
CATTGTCTTGATCATACTCTTGGAGCAGGTTTTGTTTTGTTTTAAAGACATCTG  
CCACTGCTTCTCTGTGTTAGAGCCAGTCTCAGGACTTTCATGGTCTGATCAAAGACC  
ACAGTCTGCTTGGCTGATTTCATACCCTGGACCAAGAGGCTGAGTAGACAGGACCTGTGG  
CTCTGTTGCTTCTGGCTAGCTGTGCGGCTGACTCACTGTATCCCTGTCTTACTCA  
CCCGTGAAGATAGCAGCTTCTGCTATGGACTGACTTC

>IGR3268a

gagccagcttccaggactttcatggctctgatcaaagaccacagtctgcttggctgattt  
cataccctggaccaagaggctgagtagacaggacctgtggctctgttgccttccctggcta  
gctgtgcggctgtactcactgtatccctgtcttactcaccctggaagatagcagctt  
cttgcctatggactgacttctctgctacaattcagcctttatcttcttggcctctcatt  
gtgtttagctcaattgtctggggcccgaatgccagacctcttggtagaggggctcttat  
agttaaggatctctggaaattcagaccacagctccaagtgttgagatgccattttg  
ttgtattcttctctaggaactgtctcgacatttcccttgcagtcagtggtattgaag  
gctttgatccttcatggctctggggaacaggaacctgggttcagcatgtatccctaagt  
cttactccatatgaaatgcttgtggtatgatacatgcctagaccagcaacagccctca  
caccaggtcctttaggaaatgctgcaggcctctggaaaggagctggttcttctatctgtt  
gacattcttccagctgtagctcacatgttctgttagatcatttgaaggaaaaaggaat  
tgaggcttctggtgaattggaatgagggttctatctgatag

>IGR3269a

tgtggtatgatacatgcctagaccagcaacagccctcacaccaggtccttttaggaaat  
gctgcaggcctctggaaaggagctggttcttctatctgttgacattcttccagctgtagc  
tcacatgttctgttagatcatttgaaggaaaaaggaattgaggcttctggtgaattg  
gatgagggttctatctgatagagaggaagagatgctacacctctaggattctaaagattga  
agactttggctgcatgatgtctcagcctcaccagaaaagtatttctgaccttttaatt  
ttgccttactctgtccttagcattgtaaataccacntcttcaataactgacccac  
tcttacaatagtaagctaaagatttaagtgaatacctcctcatgaatcggtcttgac  
gtacagtttctgttattaaaggcgtgagcctggggacttgagtagcctggataggga  
tcttactgctgcaaactagatggctctatgcattttgacttattgggaactgtatta  
aagaaagtaggtacgggtggcttcagaaccataatcaaatataattctccaaacctaaaag  
atgagccagctctcgcaatgcagcttcttactgcctgggatttgaatttaagcaat  
ccatttaacaagtgggaagtattggaaatgcagtcatact

>IGR3270a

atggtcctatgcattttgacttatttgggaactgtattaaagaaagtaggtacgggtggc  
ttcagaaccataatcaaatataattctccaaacctaaaagatgagccagctctcgcaatg  
cagcttcttccactgcctgggatttgaatttaagcaatccatttaacaagtggaaagta  
ttggaaaatgcagtcatactttgcagctccagcaacaagcactaattgaatttccctgag  
tgtacctgcacagcagtcacagttgtgtttaaattttcttccatgccaggtgtcgtggc  
ttacatctgtaactcagtttggggagaccaaggcaggaggattgctcgaagccaggag

tttgagaccagtctgggcaacatagtgagactctgtctctacccccactcccccaaaa  
aaaggagagagaaaaaaattttctcaagctcttgactacaaaagagatatgtttctc  
agctgctctggcacttctctcttagatgcatctccagccttagggccacctgctgaacc  
aggcttccttgctgttgacaggattccaggtattttggtacaggaatcttaaaggc  
tgaagcaatggatgacaacatgtttcatccatgctttgtattaaaattttatttgt  
agacatggaaaatgatactgccaacattttgtctcta

>IGR3271a

ccttagatgcatctccagccttagggccacctgctgaaccaggcttccttgctgttga  
caggattccaggtattttggtacaggaatcttaaaggctgaagcaatggatgacaaca  
tgtttcatccatgctttgtattaaaattttatttttagacatggaaaatgatactg  
ccaacattttgtgctctaataagaggatttcattctctataaagtcactgtccctttct  
ttctgcatttctttttgtgtgtatgtgaacagggtctcactctgttcccaggctn  
gagtgcagtggcacagtcatactcagtgcaacctgaactcctgtgctcaagcaatcct  
nctgcctcagcttctgagtagctgggactacagggtgcacgccactgtcccagcta  
ttttcattagtagagacagatggggtctgtatgttcccaggctggtctcaaacttc  
tgagctcaagcagtcctctcacttcagcctcccaagtgtgggattacaggcgtgagcc  
aacacgcctggcttctgtcccacgttttataggtctctgtattgctagtttttagca  
tcctcactgactgttgggattgcagaaaaggatatacaaaaaataccaactttctgag  
aacttatggcctagccccagaggttttatgtttcagtg

>IGR3272a

acttcagcctcccaagtgtctgggattacaggcgtgagccaacacgcctggcttctgtcc  
cacgttttataggtctctgttattgctagtttttagcatctctcacctgactgttggg  
attgcagaaaaggatatacaaaaaataccaactttctgagaacttatggcctagccccag  
aggttttatgtttcagtgagacacaatagccaactgttcccagatggacattgggtgt  
gctacttgatccatcagcttccatgtcagattctgtgcttcatcttaacctgtctctc  
attctgtctactgacgtgagacaataattgtgatttaggacttccattgtgctgataa  
gctgtccacaaaggcatttacaatttctaataccaatttatgacacctggtagttgctcag  
atgttacttcagggtccagggtcacactggggttctgtatgtagcacggtaattctgact  
gcctggcagctggccacctatgttgtgctgttctactccatgcagtagaccactgtggga  
gtctgccccactcagctctcaccaggaatagcagaggtgtaggaacagtgccaggtgctg  
agtacctccaaaactagttaaaaaagaaaatcctcgtcttaaattgttactcacttcc  
ctctggattactttctaataatgtcccaaaaactgggt

>IGR3273a

tgttgtgctgtttcactccatgcagtagaccactgtgggagtctgccccactcagtctca  
ccaggaatagcagaggtggttaggaacagtgccaggtgctgagtacctccaaaactagttt  
aaaaaagaaaatcctcgtcttaaatgttactcactttcctctggattactttctta  
atgtcccaaaaactgggtccaggccaggcccgcctcaagcagtggtccctttgctgc  
tgtctgagtgtccatgaagggtggtgctttcctcagtgatcatatgcagttcacccat  
cttgtttgttgggaaccacatttggccgcagccttactcttgacagaactgtaga  
cttgtttgtgatgttctgctgtgctgccagggtggtgtcttccaccttagag  
aggctgctcttgggagttctggtgtttcaggcctgggaagatggtatccctagagtga  
ttggctgctacagagctgttcatgctgcttacaaggctaatgctgttattcccacagg

ttgcaaattatggagtgaggacagtatgaaccgcacttcgacttcttagggtaaggc  
ctaatcacaggtgcttcaaggccctgctctagctgatttgagaagggtggagcttc  
taggagcatttcagcctccacatcagtagccccaccctt

>IGR3274a

catgctgcttacaaggtctaattgctgtatttccacaggttgc aaattatggagtggga  
ggacagtatgaaccgcacttcgacttcttagggtaaggcctaaatcacaggtgcttca  
aaggccctgctctagctgatttgagaagggtggagcttctaggagcatttcagcctcca  
catcagtagccccacccttgcctccctccacctctgcatcaccaggggaaactcttcg  
ttactggatgaatcccaaatcgaaccaagggtcctgcagaatgcagtgagcctggctg  
tctccctgtagatgtggggcgttcgtccctgccctaattctgcacctttgccctga  
ttctaaagcaaagagccctactaggtctttgtgaaaactgttctgtcccttttctctt  
ccccgtctactccatgccctagccagaattactttgcagcttggcacatattccaggc  
tgatttatggaacacacacttattactttccctgaccttttggctctagcttctgtggg  
tggtggatgaagcctgttgtaaacttgggtgaaagtgtgtctgtgcagcgacctttt  
gacagcggcctcaaacagagggggaataggttagcgacgtttctaactacgtaagtact  
gggtccaggcccactgttcattctcacttaattttgtag

>IGR3275a

tattacttttccctgaccttttggctcctagcttctgtgggtgggtgatgaagcctgttgt  
aaacttgggtgaaagtgtgtctgttgcagcgacctttgacagcggcctcaaacaga  
ggggaataggttagcgacgtttctaactacgtaagtactgggtccaggcccactgttc  
attctcacttaattttgtagaatgatgagcgagatacttcaagcatttagggacgggga  
atcgtgtggctactttctaaactacgtgagtatgatgtgtgctgatgagccctaagggg  
acctgggtccagagggtgccttatatccacccccatcagggtgatctcatctgtctg  
ttaagtaatggtcaggtccttctggctctcagcaccttcttggctgcagtagggagagt  
tggcctctgtttctattcattttccctactgccaccagcaggacttaacattctggct  
cctattttttccctaggtttaaattgtgataaacagacataacataaaacttacca  
tcttaaccatttttaaatgtacggttcagtggtattaaatacattcatagtgcgcaagc  
atcaccaccatttattccatctattttcatcatctaaaactgaaactctaccattaag  
caataattccagattccccctctgcagctcctggcagcca

>IGR3276a

ttaaaattgtgataaacagacataacataaaacttaccatcttaaccatttttaaatg  
tacggttcagtggtattaaatacattcatagtgcgcaagcatcaccaccattcattcca  
tctattttcatcatctaaaactgaaactctaccattaagcaataattccagattccct  
cctgcagctcctggcagccaccattctgcttctgtcgtntgattttggttacttaaat  
aaatggaatcaaagtattaacacttgccttttgtgtggctgggtgcataatgcctcaag  
gttatccatgtttagcataattctggcttcttctctttttttttttttttttttt  
tttgagatggagtcttctctgtcaccagactggagtgcagtggtgggatctcggtc  
actgcaacctcagcctcccagggtcagtgattctcatactcagcctccaagcagctg  
ggattatagcgctagccacaacgcctggctaattttgtatttttagtagagatagggt  
ttaccatgttggccaggctggctcacaactcccacctcaggtgatccgccccctcgg  
cctcccaaatgctgggattacaggcgtgagccactgcgccctgccattctgggtcctt  
ttgatgggcccagtgctagcttgacttttgggatgggtg

>IGR3277a

aacgcctggctaattttgtatttttagtagagatagggttcacatgttggccaggct  
ggtctcaaactcccgaactcaggtgatccgccccctcggcctccaaagtgtgggatt  
acaggcgtgagccactgcgccctgccattctggttccttttgatgggcccagtgtagt  
ctggacttttgggatgggtgccctggagggtccctccttggcatcagagtgaggagata  
gccttagctctcttagatgagagctgcctttgtgttccaaggcttaatggcctgatt  
cccacctcttgccctctgtttatccataggtttaggggttatctttcacatgaggagca  
gtttcctctcccctctgtgagagccagctctaaaggcatagaggcagtaaaagtaact  
tggagacagaagcctgtgtccatttttccctttatgctttattgtgtgttattacat  
gctggggattgtgtgtgtacatgctggtagcagaacatatgtgtctcncctgtgctt  
gaggtccaatatgagagactattttaaacatcagagagattcttcttattctttttt  
tttttttttgagacagactcctcctgtgtgccaggctggagtgcagtggcgctatc  
tcagcttactgcaaactctgcctcccagggttcaagcgatt

>IGR3278a

catgctggtgagcagaacatatgtggtctcncctgtgcttgaggtccaatatgagagact  
tattttaacatcagagagattcttcttattcttttttttttttttttttttgagacagac  
tctccctctgttcccaggctggagtgcagtggcgctatctcagcttactgcaaactctg  
cctcccagggtcaagcgattctcctgcctcagcctcccaagtagctgggattataggcgt  
gcaccaccatgccagctaattttgtatttttagtagagatgaggttcacatcttgg  
ccagactggtctcaagctcctgacctcaagtgtaccacccgccttggcctccaaagtgc  
tggcattacaggcgtgagccaccatgccagcctaaacatcagagagattattatgtagt  
tatggagacagggtgtgtgaacccaggcctgggggttcagtggaggcctctcttgggaag  
taacatatcagttgagacttaaaagttagtggaattagctggtagaacatggtttctg  
gcagaagagagagtgtatgtagctctgaagagaaaaggaacttgggatgttggaaagggt  
agaaaaaggctggtgtgtctggagagaggctagttagactgacagggccttgggggttcta  
gaaaagaatctgagttgatccacagggtgtgagaagcc

>IGR3279a

aaaagttgagtggaaattagctggtagaacatggtttctggcagaagagagagtgtatgt  
agtcctgtaagagaaaaaggaacttgggatgttggaaaggtagaaaaaggctggtgtgtct  
ggagagaggctagttagactgacagggccttgggggttctagaaaagaatctgagttgat  
ccacagggtgtgagaagccatcagagctttgtcttattcatttaccatatgtctgtca  
agtacccttcagttagtctggtatgtgtcctgtggaatatttttacctccaattttta  
ttaaattatggacaaaaaaagtaagagagccagatgggaaagaagtagtgctttggccat  
gagtcaaggcatgctctgtgggcatgagtacagccttgctagtgtggaacttgtgtcaa  
tglagttaaggccttaccataggagaaagcagggcctctagagacacagtgtccccacc  
ttccactcagttggccccaggaagggtggctactctgggaagggtgaaggctgactagag  
cagcaactactagagccagagaaacagagctgcagtggggactgcacatggtgttggaa  
acagtacagagctcctggtcagggcactttgcagagtacagtggcttaggcaaggccaag  
gctagatggggattcaaagggtggggtcagaacaggcatt

>IGR3280a

gaagggtggctactctgggaagggtgaaggctgactagagcagcaactactagagccag  
agaaacagagctgcagtggggactgcacatggtgttggaaacagtacagagctcctggtc

agggcactttgcagagtacagtggcttaggcaaggccaaggctagatggggattcaaagg  
gtggggtcagaacaggcattttctgagtacagactcagattatttcatccaggacagc  
ccggatgtgggtctcctgtgggcctcaactctgaacactcatgacatggagactgttct  
aatgaatcacactgggtaagtaggcatgggaagagcctttctggctaaagggtggcca  
tggagcagacaccaagtagtgcactcatgctgagaggaggccaatctatataccttgc  
atgtccttttgggtcaattgtctgagagccttgggtaggagggtcaagctctatgtct  
tatattccagatgagtgtatgtagaagctgggtggccaccgtcttccctgatctggggg  
ctgcaatttggcctaagaaggttaagttctgattcttgggtcagagggtgaagcaaggc  
tcagactttactttgtccatgtccccagtagcattacctggcctgcctgattgtactg  
tgatgtgccttagcccacctgggggtctgacctggtagccc

>IGR3281a

gtagaagctgggtggccaccgtcttccctgatctgggggctgcaatttggcctaagaag  
gtaagttctgattcttgggtcagagggtgaagcaaggctcagactttactttgtccat  
gtccccagtagcattacctggcctgcctgattgtactgtgatgtgccttagcccacct  
gggggtctgacctggtagcccagcttctccctgtgaagaaaggacaggagggaagtcct  
tcaggggtgggtgagttcccagacttctacctcagaaggttaggtgcttctgggaaatg  
tctctgttctggagtcacagaccctatccctgtccatgggaaaatgaggggtttct  
gtcagggcagagcttctgtgatgctgcagtcaggctcctgagcacagtctcttaagaa  
tgtttctgaaaggccatcttctccagggtacagctgtgttctgttacaacctcttgc  
ggagcgggggaaggtgactaccgaacaagacatgctgcctgcctgtgcttggggctgca  
agtgggggtgagtgtcttaagggttagtgttgggttgggtggcctcagcttgggcttgc  
tattggccttagattctgagctgggaggcaactgctgccaatttctgagactgtctcc  
cttcttaggtttttctgctgttattaccatccagccat

>IGR3282a

cgaacaagacatgctgcctgccctgtgcttggggctgcaagtggggtagtgtcttaag  
gggtagtgttgggtgttgggtggcctcagcttgggcttgccttattggccttagattctgag  
ctgggaggcaactgctgccaatttgcctgagactgtctcccttcttaggtttttctgc  
tgttattaccatccagccatgtaatgtccatgcagctggtaaatccaaggcagctggtt  
ggaaacactcagagatacacaggaagctgaagaaggcctgaggacgaatagctgcataag  
cacataggtccaggacctctggcaaggcttctgaggaggcagagtggagagctggaag  
cagtgggggaaagagtgtctcaggcaacaaggcccatatggatggaggcacaggctaa  
aaccagcataggggtgtgggggtggctccctgtcactgaagaaaggaggcctgtgg  
cacagggggcagaagatgagggtgagggtgggacaaactgcagaggctcaagcttgag  
ccttaccctgggagcagttgtgtgagcctcggagaggctcaaccaggatatgacagga  
agtgtttgtaaggagatgagtgttagccccctggagagtttgaagataaatagtgat  
agggttgcagataattaagcaaatggaaaagaaaacaagg

>IGR3283a

gctggaggctgggaccaaactgcagaggctcaagcttgagccttatcctgggagcagttg  
tgtgagcctcggagaggctcaaccaggatatgacaggaggtttgtaaggagatgag  
tgtgtagccccctggagagttttgaagataaatagtgataggtttgcagataaattaagc  
aaatggaaaagaaaacaaggcagttgtgaattcaggggaaaaaaagttgtacaagaaag  
gaaatgaagtataatctactagatggctcaggtgtaacacatgatataattatgtacac



actgagtattactttaactaaaacttatgatttacctgtactggaaagggtgggaggggat  
gagtttggttttaggggtagaataaaagaattccaaagttgaaagtcagggaatagaac  
tataagcatcttatctagaaaaatgaggttaaatacagaagaaacagctagaggagttt  
aatgttccctgggagtgagattagggatgggaaggagaggcttaggaggagtgcattt  
atcattataagccttgcgacaattttatTTTTTcaatgaagtacatgttattactttat  
atTTTaaagctctgtgacttcagtagtcattgaaataaaattttattcattatgaga  
gagctctgtgaggaacagaatcatggttctgtgtgttga

>IGR3284a

attagggatgggaaggagaggcttaggaggagtgcattttatcattataagccttgcgac  
aatTTTatTTTTcaatgaagtacatgttattactTTTatTTTaaagctctgtgact  
tcagtagtcattgaaataaaattttattcattatgagagagtctgtgaggaacagaat  
catggttctgtgtgtttgaagatatggcgtggggatagtgctggcagcagctctgtt  
gctcttgcgccatggcatacagactggatctgctggtccacggctcctgaggttaatgt  
ccaagccctctgcaatgtgacagtcttctcctcctcacaccctacctcagtttcta  
cctgccacctcccagtaataattaggcctcttgagtcccaacacacgtcagggtggcttc  
tgcttgattactttctcctctgtgtcactcctgggaccctcttggtgagagaaccat  
ctgggtatgccatcttcttccaggataacttctatgtagctttatattctagccctag  
gatttctcttccctctaagagcaagaacatgtgtgcaggttgccatgggaatagagcc  
aaagggcatcaaaggctatgggcatgaaagggcatgattagatgcccttgggtgctattc  
ccatggcaacctgcacacatgtatcttgtccactggcag

>IGR3285a

cccaggataacttctatgtagctttatattctagccctaggatttcttctcctctaag  
agcaagaacatgtgtgcaggttgccatgggaatagagccaaagggcatcaaaggtcatg  
ggcatgaaagggcatgattagatgcccttgggtgctattcccatggcaacctgcacacat  
gtatcttgtccactggcagaatttcatacaattatctgtttacatgtgtcttcttacc  
aattcttcagaaattgaggcctgagatcatgtcttcttattgtgtctgattccagg  
gcacagtgcagggggatcatgaaggagtcattcattcaggctactaaactgaccaata  
ggattgtaacatgcttgtttctttcacagtctccaataagtgggttccatgaacgagga  
caggagttcttgagacctgtggatcaacagaagtgactgacatcctttctgtccttc  
cccttctggctcttcagccatgtcaacgtgacagacaccttgtatgttctttgtat  
gttctatcaggctgattttggagaaatgaatgtttgtctggagcagaggagaccata  
ctagggcgactcctgtgtgactgaagtcacccctccattcagcctgtgccatccctg  
gccccaggctaggatcaaagtggctgcagcagaggttagc

>IGR3286a

catgtcaacgtgacagacaccttgtatgttctttgtatgttctatcaggctgatttt  
tgagaaatgaatgtttgtctggagcagaggagaccatactaggcgactcctgtgtga  
ctgaagtcccagccctccattcagcctgtgccatccctggcccaaggctaggatcaaa  
gtggctgcagcagagttagctgtctagcgcctagcaaggtgcctttgtacctcaggtgtt  
ttagggtgtgagatgttcagtgaaccaaagttctgatacctgtttacatgtttgtttt  
atggcatttctatctattgtggtttacaaaaataaaatgtccctaccagaagcctta  
aagagccttacttggagtatTTTaaagactggaagctttaccaggttcatcatttcta  
tgcataccttcatgcaggcagagcttgataatgaatgcttttagcagcaaaaaagcatc

ttgggtcttggatttcagacctgggttcaacacttggttccctctaagtgtagtgcc  
tttctggaaagtagggtaaatagtttctttgtctcccagagaacatagcacatgtgt  
tcatgattgtaatgctgttataatgtgtacttcatttttaattttgagataagaattgt  
tcatgatacacagatgtatacttaaaaaaatatgaagggtg

# >IGR3287a

ctgggttcaacacttggttccctctaagtgtagtgcccttttctggaaagtagggtaa  
atagtttctcttctcccagagaacatagcacatgtgtcatgattgtaatgctgtta  
taatgtgtacttcatttttaattttgagataagaattgttcatgatacacagatgtata  
cttaaaaaaatatgaagggtgagcaggagcacctgtgtcaacaccaagttagaaaagagaa  
cgttttcaagtcagtagcagggagcccttgggaaccctcctagatcacatctccttc  
actgccccagcaccttggagataaatcattgtctcatgatgtgtggtactcattccttt  
gcttgtctttatagttttaccatctatgattagatccctaaataagtagttattctgttt  
tccctgattttgaacttttactaatagaatnagagtaaataattttgggtatgtggcttc  
ttttgtcaacattgttttaagattcatccgtgttgcctgtgtagctgtaattgtttta  
atctttatagtagcattcagttttgtaatgcttattgtaggactgtaccataatacaggc  
agcatgctgctgataaacactggaattgatttcagctttgtatattgtgaataatgctg  
tgataaacattttatcatgattcctggtgcacataata

# >IGR3288a

agattcatccgtgttgctgtgtagctgtaattgttttaattttatagtagcattcagt  
tttgtaatgcttattgtaggactgtaccataatacaggcagcatgctgctgataaacac  
tggaattgatttcagctcttgtatattgtgaataatgctgtgataaacattttatacat  
gattcctgggtgcacataataaacacataattctgtaggatataatctaggagtggaaatg  
tggagtcttaaatgggttccaactttactaaataatgtattccaagggtggttatacacat  
tctcaccaggagtaaatgagagtattaccccaacttttccantatttagtattttcat  
actttgaatttttagctagcttggtagcatgttacggactaaatgtttgtgtccccacc  
agattcatatgttgaatcttttttttttttttttngacggagtctcgtctgt  
cgcccaggctggagtgcagtgccgngatctcggctcactgcaagctccgcctcccgntt  
cacgccattctcctgcctcagcctcccaagtagctgggactacaggcgcccgccactacg  
ccgggctaattttttagtatttttagtagagacggggttcaccgttttagccnggatggt  
ctcgaatcctgacctcgtgatccgcccgctcggcctcc

# >IGR3289a

ggcgngatctcggctcactgcaagctccgcctcccgnttcacgccattctcctgcctca  
gcctcccaagtagctgggactacaggcgcccgccactacgcccggttaattttgtatt  
tttagtagagacgggggttcaccgttttagccnggatggtctcgaatcctgacctcgtg  
atccgcccgcctcggcctcccaagtgctgggattacaggcgtgagccaccgcgccggg  
ccatattgtgaaatcttaacccccaatgtgatgatattaggatgcggagcccttgggagg  
tcgtaagcatggagccccagtgagtggttagtgcccttatgaagagatccagccctc  
tttctgcatgcgaacacacagcaagaagatgcctgtctatgaaccagggggcccttacc  
agaaacaancctactagcatcttgatctcggactttccagttcccataaccatgagaaat  
aaatgttttaattcaatgtatggtattttattatagcagctctacctaagacagtacat  
gtatagtgtctattgaacattactgataatgttgaacaactttcatgtttattagtta  
ttaggtttctcaagtggttcttattcatacaattttaaaatatgtacacaagttctttg

ttatatattttgcaaatatcttctgtggcttgcctttca

>IGR3290a

atggatattttattatagcagctctacctaagacagtacatgtatagtgtctatttgaaca  
ttactgataatgttgaacaacttttcatgtttattagttattaggtttcttcaagtgttc  
ttattcatacaaattttaaaatatgtacacaagttctttgttatatatttgcaaatac  
ttctgtggcttgccttttactatttttagttctgtcttttgataaacaggagctttta  
tttatgtcaaactatcaagctttttcttttgatttatgtttttatgtcttatttga  
gaaatccttctatacccaagatcatgaggatgttctgtgttcttctgaaagctat  
atagtctttgtcatttaggtttatctttatacgtggtatgaagtgtaaagttctactttt  
aatttttgcataattttattaggataggatgggctttttctgtagtaataatcnaaat  
ctcaggggcttaatatataaaattgtctcatgcaaaaaaccactgggtctagggcaattg  
ctatctactgccgtctaactcctctctagtggcttccattggtagaccctaacaggaagc  
cagctgataaggggaatctgggaaatgtagttacagagtggcagctacagtagaacagta  
gagactacaaggatgagcttgcagctgagaatagaaacgt

>IGR3291a

aattgtctcatgcaaaaaaccactgggtctagggcaattgctatctactgccgtctaate  
tccctctagtggcttccattggtagaccctaacaggaagccagctgataaggggaatctgg  
gaaatgtagtttacagagtggcagctacagtagaacagtagagactacaaggatgagctt  
gcagctgagaatagaaacgtgactggcacactaggtggtttgtttgtaggtttttctt  
tcctgtttgagacttttttgattcttgaattgtacaatgntntcctaataatgtg  
gaaaattaaatgatttttcttcagcattgtctgttcttctgtaactgattaaatgt  
agttggatcataatcatgatattatcttfaatctgtcttcatattttatatatagct  
atatttggggagaactttatagctgtttgtacaaagttcactaattctgtcttctatca  
agtgcatacaggagctgtttaaaggactttaagatgtaattcttgtttctggcttat  
accatttctgttgaaaagtcgctatctggctccttggttgtccttgaaggatgatttgc  
cttcacctggctgctttaaagattttttcttttggtttcagtagtttactatggtg  
tacttagtatgggttcttttcttttcttgccttggcatt

>IGR3292a

taaggactttaagatgtaattctttgtttctggcttataccatttctgttgaaaagtc  
gctatctggctcctttgtgttccttgaaggatgatttgccttcacctggctgctttaaa  
gattttttcttttggttttagtagtttactatggtgtacttagtatgggttcttt  
ttcttttctgcttggcatttagcttctgaattcttgggttgatgtctgatcaatttg  
gaaatttctcagacattatatttcaactattgttctgtccatttttctctatctgc  
tctgagacttcagtaactgaatgttagaacttttcatagtgtctatatatctccagtt  
cttgtgtctctcatgctttttcttgtgttcagactagatatttatactgatctgtc  
ttgcaattcatttattacttttgcgtctaaaccatctactgagttcttaatttcattt  
tcttatatttctcagttctaaaatatccattcatgtcttttttttttttnccttg  
agacggagcttctctgtcaccaggtcagtgagtgaggggatctcagctcactgc  
accctctgtctccagattaaagcaatttccacctcagcctcccaagtagtgggatt  
agaggcacgcaccaccacaccagctaattttgtattt

>IGR3293a

2825.1025-002

aaataaccattcatgtcttttttttttttttttnccttgagacggagctttctctgtc  
accagggtcgcagtgagtgaggatctcagctcactgcaccctctgtctcccagatta  
aagcaatttcccacctcagctcccaagtagtgggattagaggcacgcaccaccacac  
ccagctaattttgtatttttagtagagatggggtttgtcatgttggccaggctggtcg  
caaaactctgacctcaagtgateccactgcctcagctcccaaatgttgggattacagg  
cgtgagccaccacgggtggccattcatgtccttttaattggatttaactctctggagaa  
tctgtctctgttttctgtgttttctcggactgataaatcagttatgtgaattttt  
tgtccgataacgccatgatttcgattttctatggctctctttctattgtcttttccctc  
cttagtttctggtcatttggccactctgttgatatgcttggcaatttttgattgaatgt  
gtatgacaaattgtagagcctctggatggataacctctgcacaaagggtcacctttc  
ctctactatgcagagtggggatcaatcaccttaatccagtaaggatctgagctgacttaa  
aattaagactgggtggtagtttttctaagactctatctct

>IGR3294a

[illegible]

>IGR3295a

[illegible]

>IGR3296a

cagacttttggtcaccacaagattatccttcttcaggatcttgatgctcaaactctt  
tttgcttcagcaattgactgatgtcttccaacaatttaagagattttaitcagctttat  
tctaggaatgaaaattggtctaccataagctactctatcttgggaagtagaagtggcctat

tcatttttaaaaaatcattttcctatactgatacagaaaaccttatctttcatatctt  
ctttgttacctagtataacaagacgcttcacactcatcttgagcatttttgacattaag  
catggaatcagccgttaaagaatcttattatatgttgatgtctgcctatcaatcccagca  
tggctctgggaacaagcatgagataacttctgtcttagagccagggcactgctttcagca  
atccttattaattgagcttggcattaatatgttcactagggcagtaaagagttattgagc  
gtttcattatgcatttggtagtctgtctagggatgttacagtctattactgcattcagcaa  
ctcttcagaacgaatacataagaagcagaacgtcagaaaggtaggtaatatacctgagg  
tcacatgaagtctcattgctggtaagtggaggacctgggaatgaaactntggcagcttcc  
aaaagccttgcctctaaaacaaaatttatatttcatgca

>IGR3297a

ctgtgctagggatgttacagtctattactgcattcagcaactcttcagaacgaatacata  
agaagcagaacgtcagaaaggtaggtaatatacctgaggtcacatgaagtctcattgct  
ggtaagtggaggacctgggaatgaaactntggcagcttccaaaagccttgcctctaaaac  
aaaatttatatttcatgcatttaacagttattaaagatttgatggggaaacataaagac  
tgtctttatctttaagaattctgagcaatggaagggactcataaataagggtgtgtgaaat  
gtgagaagtctggttaacagagaatgtgcttgaggagcacagtagagtgaagggtacttt  
aaccaagaagtggcactacagtaggcaccgttgagctgggtcttgaagtatgagcagg  
aatttgttactgtgctatcctagtttaaaatacatgcacgtggcttaaaaaataaggga  
caaaggaaattaccctaaatagttgctgtcccacttactgccaactcctagtccccctt  
cctagaggaacctttcaaattattttaattttctgcctattaaatgcttataaaatg  
ctgttccctgattttccacttcagaaattgagagatgatcatttagtttatattcact  
atcctccatggtacccccctgccttgcctttttga

>IGR3298a

agttgctgtcccacttactgccaactcctagtcccccttctagaggaaccttttcaa  
ttattttaattttctgcctattaaatgcttataaaatgctgttcttgattttccac  
ttcagaaattgagagatgatcatttagtttatattcactatctccatggtacctcccc  
ctgcctttgccatttttgatagtataattttgtatagtcctctcttgtttgcctggcaa  
cataaattttttgtttggttaaaactaagatggtgagatgaagatctaaactagaattt  
taccaaacaaatgatcactattgtctagccaagttgacacatagaattaagtatcatata  
cccttttgcctcccaactgccggtcagttatgcttggacattatttagtagccatagt  
aagttgcttctaaaagtgaacacacaaatgttatgttcttaatttcgtgaattagtc  
actataatgttgatgtagctaatcataaaaagggaatttggtcttatttgcataataga  
ttcaaaatgaatttataatgtatataatttgatagggtacaataacaaaataccacaca  
ctgggtggatcaacaaaagggaattgttttctactgttccagaggctagaagtctagg  
atcaaggtgtcaacaggtgtgtttctctgaggcctcac

>IGR3299a

aatcataaaaaggaatttggtcttatttgcataatagaattcaaaatgaatttataatg  
tatataatttgatagggtacaataacaaaataccacacactgggtggatcaacaaaag  
gaatttgtttcttactgttccagaggctagaagtctaggatcaaggtgtcaacaggttg  
tgtttctctgaggcctcactgcctggcttggtctgtgtgttctatgtcacctcttgg  
tctatgtgtgtctatgtcatatcggaattaaagcctgcacatatgaactcattttacttt  
aattatgtcttaatgccctgttgccaaatacagtcacatattgggttaggactttagca

tatgaatgttgggagaacacataaaactactaggaaatcatgttagatctgatatactat  
tgagactaaagcaaaatacttttccttactctttgtacatcagatatagcccatcatgaa  
caaatgtatctgattattaagtatgttgcataagaataatgtcataacactagaagttt  
ttattttgagaaaagagatataggctcttatgaaattattaataaattgaaaaagata  
ttgacataaaatatctttgaggccatggatataattggacaaatacagcaggtgtgtata  
taagggtggaaaagccattatttcccccaaatggttat

>IGR3300a

gtatgttgcataagaataatgtcataacactagaagtttttattttgagaaaagagat  
ataggctcttatgaaattattaataaattgaaaaagatatgtacataaaatatctttga  
ggccatggatataattggacaaatacagcaggtgtgtatataagggtggaaaagccatta  
tttcccccaaatggttatgccaaataagttcataatctgtgcaaaatgctgcttcta  
tgaattaaaataaacttttttagtgtgtacaaatgatacataatctttatgaattcat  
tgagcagtggaaatgttatgcttgttctaaaaactacattaaaaacaaatcctgagaggca  
tcaaagtcaaataatgatcaaggtactttacacaaagatgtttgtcaaatattaaaagaac  
ataaaatgacaaaatacaatcctgaaataggaaccatctttgtgtgaacagattacaa  
attttcatgtaacttctctatgtggcatggcattttgaactaaatatagtagaaaaaggt  
ttatgaaaaaaaagactatatacaaaagctgcatgcttaagaaaaggcctattcgttgc  
tatacaaatgagnnaagtaacttaangttatgttcgttaatgtaanactttaangn  
gntataantntacttnangnnaaatcagaaatatacaaat

>IGR3301a

tgtggcatggcattttgaactaaatatagtagaaaaaggtttatgaaaaaaagactata  
tacaagctgcatgcttaagaaaaggcctattcgttgcctataacaaatgagnnaagt  
aacttaangttatgttcgttaatgtaanactttaangngntataantntacttnangn  
naaatcagaaatatacaaaattactgaatgagtatatcaattattgtgggaaaagtgtcg  
tcgaatagaaattaaagagattacagatgtcctagagatggagatatgaaaatcaaatg  
aagtattttgtatttttacttggagaaatttctacgaatacatctgattaacaaaaag  
cagccatggccttgacttacctttaaatagtccaatgatttatatcctgtggcaatttc  
atctgaaatagtggtaaataagcatgcaatatcaatagtttgcatacaaatgtgacct  
gaaagagccagtccttcaagatggatcttaagtggctgagtggcctaaatttaaagcag  
agccaagaagccatttggtagtagaggccacacacattttgagttccctgaaaaccc  
acaccttttaactttggaactttagagctcacctgaaccagccaatcagagcccacct  
cccttgcctgcagttgtatcaaccaatcagaactgtgtt

>IGR3302a

atggatcttaagtggctgagtgggcctaaatttaaagcagagccaagaagccatttggtg  
actagaggccacacacctattttgagttccctgaaaaccacacctcttaactttggaa  
cttcagagctcacctgaaccagccaatcagagcccacctcccttgcctgctcagttgtat  
caaccaatcagaactgtgttccatctcatttgcagtgacacctgattgggaaccagg  
gcaggaactttgtataaaagctagaaccttcccttgttctttggaccgcaccttccct  
ttacattgaaggtgtgttgactccctagtttgcactaattcactggaataaagtctc  
ttcttccagggaactttgttcacatttgaatataaaatcatgatgtttgtatcctct  
aaaacggatttgcaaattttctcgggcagccttaccctaaattcaaatggctcctgat  
aattttttaaacaataaccagtcacagtgtgatatagtttggatctgtgtccccacca

atctcatgtcaaattgtaatcttcagtggtggtcatgggcctggtagtcggtgattagat  
catataatggaggcggctctcatgaatggttagcaccattcccttggtgctgttctct  
tgatagtgagttattgtgagatccggtgtttaaagtgt

>IGR3303a

agtcacagtgatatagtttggatctgtgtcccccacaaatctcatgtcaaattgtaat  
cttcagtggtggtcatgggcctggttagtcggtgattagatcatataatggaggcggctct  
tcatgaatggttagcaccattcccttggtgctgttctcttgatagtgagttattgtgag  
atccggtgtttaaagtgtgtatacactttgggaggctgaggcggcggtgattgcttga  
gctcaggagttcaagaccagcctaggcaatatggtgaaacctcatccctacaaaaactac  
aaaaattaactgggcatagtggctcactcctgtagtcagctactcaggaggctgaggt  
tggagaattgcctgagccgggaagtggaggctgcagtgcagcaagactgtgtcactgca  
caccagcctgggtgacagagacctgtctcaaaaagaaaatgtagcacctcctctctct  
ctctctctgtctctcactgtctcgttctctgtctctgtctctcagccatgtaa  
gatgtgcttgcctcccttgcctttagccatgattcatagttcctgaggcctctccag  
aaatggaagccactacactnctgtacagcctgtagaacctgagccaataaacctcttt  
ctttataaattacccatttcaggtatttctttatggca

>IGR3304a

gtctcgttctctgtctctgtctctcagccatgtaagatgtgcttgcctcccttt  
gcctttagccatgattcatagtttctgaggcctctccagaaatggaagccactacactt  
nctgtacagcctgtagaacctgagccaataaacctctttctttataaattacccattt  
tcaggtatttctttatggcaatgcaagaacagaccaatgcacatggtatcctgcaaaat  
cctgaagttaattaagaattatttaagaggcgcggtggctcacgcctgtaatcccagcac  
tttgggagggtgaggtggnggatcaggaggtcaggagattgagaccatcctggctaacg  
cgggtgaaaccccgctctactgaaaatacaaaaaattagccggcgtagtggcgggcgcc  
tgtagtcacagctgcttgggaggctgaggcaggagaatggcgtgaacccgggaggtggag  
cttgcagtgcagcgagattgcgccactgcactccagcctggcgacagagcgagactccg  
tcaaaaaaagaacattttaaagatcgtcacttaagaagtagattttgacaatttt  
attgatcagttacttccattaaagtcattggtataaaatattaaacttaatatgagtt  
ttaatataccaacttcaatattgtcaaccaatttaagt

>IGR3305a

cgcactgcactccagcctggcgacagagcgagactccgtctaaaaaaagaacattat  
ttaagatcgtcacttaagaagagtagattttgacaattttattgatcagttacttccat  
taaagtcattggtataaaatatttaaacttaatatgagttttaatataccaactttcaat  
attgtcaaccaatttaattgtgtaaaaattaacaaaaacacgaaaacgtacgtaagaagca  
tacgtttttcatttgcctcaggcttcaatatagtttggcacagcactgctcttaagtti  
ccaaacttggcattttgntccaatatttagatttgcagattcagcaaatgaaaatacaa  
gtaacaccagtttaactttagataaataacacataattttgcataggatatatgcata  
ctaaaaagtgttgccttatctgaaatttaactgggcattttgtataatatctggttaatt  
ctaaaaataattatcttacatggttgaaaaagctgcctgcttcttagtacaatgtaactg  
ttgcaccaacaccgtcttgcctgttgattgctggttatgtggatgactgaagcgcanac  
angggaagtcatatggnnttntgtgtcacantgtccagcntgtaggtatgtccagtcctta  
ccaggtntagaagaacacagcagcctcactccatccgagg

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

>IGR3306a

tggttgaagagctgcctgcttcttagtacaatgtaactgttgaccaacaccgtcttgc  
ctgtttgattgctgggtatgtggatgactgaagcgcanacangggagtcataatgnttn  
tgtgtcacantgtccagcntgttaggtatgtccagtccttaccaggtntagaagaacacag  
cagcctcactccatccgagggcagaggagcagcatattcccantgcatgacctctc  
cccagctcentctgnttcagtcacactgacggccccagtcattcgtgnttgggtcct  
tctgcctggaaggtaccaatacctagtagttntaccctcattccttcaagactgatca  
aagattaccttatccaaaagagtcttcttgtttcactgctgtgctgctgggtagtct  
ggaattcttgccctcaagcaatcttcccaagaggttcttcttcttcttcttcttctt  
cctccttcttcttcttcttctgacagtcttcttgttggccaggctggagtgcaggg  
gcgcagtctcggtcactgcagcccactccaagaggcctcatgactactcgaaggatt  
tgcgttctcattcttcttcttcttcttcttcttcttcttcttcttcttcttctt  
tttttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttctt

>IGR3307a

ttcgacagtcttcttgttggccaggctggagtgcagggcgagtcctcggtcactgc  
agcccactccaagaggccttcatgactactcgaaggatttgcgttctcattcttctt  
ccttagcctgttttcttcttcttcttcttcttcttcttcttcttcttcttcttctt  
agtcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttcttctt  
cgccccctgggttcaagcgatttcttcttcttcttcttcttcttcttcttcttctt  
atgcaccaccacgcccactaattttgtatttttagtagagacagcgttccaccatgt  
ggccaggctgttctcgatccctgacctcaagttatcttcttcttcttcttcttctt  
gctgggattacaggcgtgagctaccacgcccagccctgttttatttctttagagcact  
tatcactgaggtaaaaggtgggacttgactccagacgcaggcgtcggacaccggaccaga  
ttgaggactggctaaaacaggggcaggccaaagtagcttcaatcagcccaccagggtg  
ctacgtcgggttgagttgctatgacaacacctggcggttagggcccccttccatggtaa  
tgacccaatgaccccaaggttactactccttcttcttcttcttcttcttcttctt

>IGR3308a

ggacttgactccagacgcaggcgtcggacaccggaccagattgaggactggctaaaacag  
ggccaggggccaaagtagcttcaatcagcccaccagggtgctacgtcgggttgagttgc  
tatgacaacaccttggcgtagggcccccttccatggtaatgaccaatgaccccaagt  
tactactccttcttcttgaagtgctgcataaacctcccccttaattctacatgtaattaaa  
gtagtaataaacatgactgcaaaactgccctgagctgctaccactgtcaatgggtagc  
cctgctctgcttcttcaagaaagctgttttcttcttcttcttcttcttcttcttctt  
tcttgggcaaaagccaagaactctcgtgggctaagctccacttggggctcactgcccc  
catcactaccaccggttaagagatttaattgggtatcagttcgtggtctgttccccca  
tggtatagaaggtccttgaaggaaagaacttgccttcttcttcttcttcttcttctt  
cagaatgggcttggaaagcagcagcagcctcttcttcttcttcttcttcttcttctt  
actcggagctcagtagccagataaaggacacccccagataaaggacaccaccttccc  
ccgcgcaggcctcgggaaaggcgaggccgtgcgaggcca

>IGR3309a

ggaaagaacttcttcttcttcttcttcttcttcttcttcttcttcttcttcttctt  
catcagcagccttcttcttcttcttcttcttcttcttcttcttcttcttcttctt



ataaaggacacccccagataaaggacaccacccttccccgcgcaggcctcgggaaag  
ggcgaggccgtgcgagggccacaggaaggggctggcctctgaggacctgggggcggggtc  
tggcagggtcagaggtttctggaaaggcctttgacctgtggcggttcctagaggtcag  
gtggtgagaatggcggggtcagcggacagcagtggggctacaggctgtgtctgtggctgc  
cctggcttagggctctggctggccctcctttccgacctggtctggcagagcagccccgc  
aggaccagctcgaaggctcctggggccagtggggctctgtcctgtgaggcggctccctcc  
gcaaggacagagtcagagagaggctggtagtcaaggatgtgctctgagcgggggtctgg  
gtgcgtcaaatgatgtcttgagcgtaatatctaaggctgacgctactttgaagaggttta  
acttttgaagattctttattctaaactcgggggaaacttttttttgaatcgcagt  
caaatgctctaccactgagctatacccttctgccaactt

>IGR3310a

aggctggtgagtcgaaggatgtgctctgagcgggggtctgggtgcgtcaaatgatgtctg  
gacgtaatatctaaggctgacgctactttgaagaggtttaacttttgaagattcttta  
ttctaaactcgggggaaacttttttttgaatcgcagtcgaatgctctaccactgagc  
tatacccttctgccaacttttttttgaagcatttgggggttgtagaagataag  
tggtaggaaaggccatgggtatttggcaagctcaaagttttttgaagcactttt  
cagtgcttttctgaaagtgcgtttataacatggaggatcagccccctccccacaccag  
cttggtctccttctctactcttctctgaaaagtcacatcttctcttgaatttgc  
agccaacggagcctactaaagtaatgacccaaactgctttgtaccagtggggtcaca  
gctgtcatctgcctgcttctttgattcaagaagcttaaggcaagctgcttatgctaga  
tttactgtctcacttccattcttaattttgacgcagtgagtcctcccaactaatt  
ctctggaattgtctggttaaagtgtctgggtctcctagtgggccaaaccagtagacact  
tcggacagtttttttctctagcgaagcacttctg

>IGR3311a

tttgattcaagaagcttaaggcaagctgcttatgctagattactgtcctcacttcca  
ttcttaattttgacgcagtgagctcccccaactaattctctggaattgtctggtaaa  
gtgtctgggtcctcctagtgggccaaaccagtagacacttcggacagtttttttt  
cctctagcgaagcacttctgtattcaagttctcttatttccggcctcctggctcct  
ttcatcagcctaggcttctcatatatgttccctagctagttgttcttttcacgg  
tagtactgtatgctataggaggaaggatcttactccactgcttaacatgtatatgtt  
tatgattattgaattgtcttttgtactcaaatcttctcttgagctctgttttagacc  
cttatatccanenttctagaggacataccacctggaccaacatctagaatagggtgcag  
aaattattcaacaaatgatcacaatagggcctgatgtaggaaaaatacaattacaatga  
ctgttaaccttttggggtgacagaccctctgagaccatataaatttcagggtcttta  
tcccttataaaagtgcacacaaaatttgcctgttcaagcttcttagacctctgtag  
ttcaagaatttgaggcttgggttagagcttctgatatga

>IGR3312a

acaaataggcctgatgtaggaaaaatacaattacaatgactgttaaccttttggggtga  
cagaccctctgagaccatataaatttcagggtctttatcccttataaaagtgcacac  
aaaattttgcctgtttcaagcttcttagacctctgtagttcaagaatttgaggctttg  
gttagagcttctgatataatgataaaatgaaaaagtgttttcacagataagcat  
cagatttngaaacttacaatgggaatgcattgtattccagccgtcatcaaacgttaaccc

tgattaatcacatcaggctgatttatggaaacattgtcttttagcagtagcaacatagaat  
gaaaaatctggagccctagagttgaaataatccccagcagactccctgtggctaaaatga  
gacataccaaaaccagaatctaacggccacagcaagatgagggcttggtcatgtatccct  
gtgttactaactaccataagggttttcttctgtaagcagaaaccaggtcctgaaaaaca  
tcacagaaactacagctggaaatttctgttgaccctgatagactactacttgacaccag  
ccgaccgatctgtggctgccaccatggctcctgccacaattctgatgggacagagaatt  
ggccttacttttcttctgataaatagccatagacctcaa

>IGR3313a

gttttcttctgtaagcagaaaccaggtcctgaaaaacatcacagaaactacagctgga  
aatcttctgttgaccctgatagactactacttgacaccagccgaccgatctgtggctgc  
ccaccatggctcctgccacaattctgatgggacagagaattggccttacttttcttctga  
taaatagccatagacctcaagccagccagtttggccagcttatagagactgtacacaaa  
ctgtcttctgtccctgtagttcaccttttctgatgcaaagagccaaattcaccttacttta  
atgctaaaacccccacccaaagtgaacatggaatgcatgttacatatatgtttaccact  
gcacacatgcttgacttccctcatgaatattcacagattcctttaagcctgctaaatata  
accagctaattttatatttttggtacagataggggttcacatgttggtcaggtggt  
cttgagctcctgacctcaagtgatcccccgcctcggcctcccaaagtgtgggattaca  
ggcgtgagccaccgcgccagcctcatgatgatttctaaacacagattccctgatccat  
gtgggcgtgtgtgtatggcggcgcaattttaggagtcaactataacaaggtcccaagga  
agtgagagggggagccaagctccaggggacagaagagggaa

>IGR3314a

tgatcccccgcctcggcctcccaaagtgtgggattacaggcgtgagccaccgcgcca  
gcctcatgatgatttctaaacacagattccctgatccatgtggcggtgtgtatggcg  
gcggcaattttaggagtcaactataacaaggtcccaaggaagtgtgagggggagccaagct  
ccaggggacagaagaggggaagggaaggcgaatggtgagtttcttttagggcccatggt  
gtatgcaggaaacacttctccccattttgactttggtgtgtaatgaaatagccaagca  
acacttttcttcttctgaacttgcctgaggaaaaaggaaaaaggatccaaatctatc  
tgtcttgagcaaagatgacagaattgcaggcagtgacatgatcaaatgtgctgaggaca  
ggagcaaaccacgcacacctggagatccctgtaaggcataaataccagcttctatc  
ccttttgagatgtccttttggtttcctgggaggtgcattcccaattgtagattg  
ttctccctctgaaaatagtttttcccttttctcctctgtgcatctcatggtctt  
tgtaacatttcaaagagagtttctgattaactgtgggtgcatgtttcacagtccaat  
agccttagcctggctcagagaccagggcctgcttcagataa

>IGR3315a

tggtttctcctgggaggttgcatccccaattgttagattgttctccctctgaaaatagt  
tttttcccttttctcctctgtgcatctcatggtctttgttaacatttcaaagagag  
tttctgattaactgtgggtgcatgttcacagtccaaatagccttagcctggtcagaga  
ccagggcctgcttcagataattacgaagtgttgctattaagagtgtaacctggctggg  
tgcagtagctcacgctgtaatcctagtactttgggagggcgaggtgggtggatcattg  
aggccaggagtttgagaccaacctgaccaacatggtgaaatcccgtcttactaaaaata  
caaaaaaattagccaggcgtgggtggcacacttctgtgattccagtgacttgagaggctga  
ggcaggagaattgcttgaacctaggagtgngaggttgcatgagccaagggtgcgctact

gcactccagcctgggcgacagagtgagactctctgggggaaaaaaagagtgaatctg  
ctccccccagctggacgggaatacagataaggtttgaggcctggcctgtaggagc  
cctgagtcatcaggcagtcgtagaagtgcagtgaggccaggggttccctccagcagaa  
cttgccctcttatttggggccagtgacttctcagttc

>IGR3316a

gagtgagactctctgggggaaaaaaagagtgaatctgctccccccagctggacggg  
aatacagataaggtttgaggcctggcctgtaggagccctgagtgatcaggcagtcg  
tagaagtgcagtgaggccaggggttccctccagcagaactgacctcttatttgg  
ggccagtgacttctcagttccagagttatgccttgatggccatgagtgctgtttgag  
attgacccccactctcttgaatgaaatataattcatctctttctcttattgata  
tgttaatatatttttaataaagggtgagatctaaggagacattatccactttgttaa  
acccttctctggctgccatgatccaactatctctggttttctctatctctgcctac  
aacttctcaataccgtagtctctgtggccctcttcccaatcctcagttatggctcag  
agttctttatagccatttttttctctgaaggctcatgacttccaaatacttgatat  
tccaaatacttgatatcagtatattgataaactcttgagctttaattctagctt  
ttattactttccaaactccagctccagctctacttagatggcccgaagttcttccattt  
taatagatccctaaccagggttcattatacttccctaaat

>IGR3317a

tttttctctgaaggctcatgacttccaaatacttgatatccaaatacttgatatcagt  
atattgatattgataactcttgagctttaattctagcttttattactttccaactcca  
gtccagctctacttagatggcccgaagttcttccatttaatagatccctaaccagggt  
tcattatacttccctaaatgggtctatttctgttttactatctttgcaaatggcaaa  
aatgactgatcattctcctagcctcagctaggagggcattctctcttcttctcactgt  
tcttgataactattcatgtgaacttcttttcttctgcttggtattttccccactg  
ttcaggaaattggtaacctgttctatttgccttaacttttagagcaaccttagagt  
ttaggtatatagttccattttactcatgagaaaacaggcttacttttaaattattaat  
tacacaaagaaaatgtacatgcatgttaccttaagcaaattaggcaaaacagaaatag  
aataaaatattacagtgccccctccctccattactctcctatgtctttagcagtggttc  
tcagctggggagattttgtcccttagggcagtggtccccagacattttggcaccaggggac  
agtttcatggaagacaattttccatggacgggggttggt

>IGR3318a

gcatgttacctctaagcaaattaggcaaaacagaaatagaataaaatattacagtcccc  
ctccccccattactctcctatgtctttagcagtggttctcagctggggagattttgtc  
ccctagggcagtggtccccagacattttggcaccaggggacagttcatggaagacaattt  
ttccatggacgggggttggtgggggatgctttcagaatgaaactgtccaccttagatca  
tcaggcattacactctcataaggagcatgcaacctacatccctcgcagtgtcatgcatag  
ttcacagtggagtttgcgctgctatgagaagttaattgtgcagctgatctgacaggaggc  
agagttcaggcagtaattgtcactcgcctgctgtcacctgctgtgcagcccgggtgcta  
acaggccactgaccggtactgatttgcagcctgggcattggggaccttccctaggaga  
tatttgacaaggctctggagacaattttgattgcctgacttaggggatactactggaata  
aaactacctattgggcactaaaatatatatataaatatatataatataaaaaatata  
tataaatatatatgtaatatataaaaaatatataaaaaatatataatataatata

taaatatatataatatataaaaatatataaatatatat

>IGR3319a

caatlttgattgccttgacttaggggatactactggaataaaactacctattgggcacta  
aaatatatatataaatatatataaatataaaaatatataaatatatatgtaatat  
ataaaaatatataaaaatatataaatataaatataaatatatataatataaa  
aaatatatatataaatatatataaaaatatataaatatatataaaaatatataaa  
atatataaaaatatataaaatatataaaaatatataaaaatatataaat  
atatataaatatatataaatataaaaatatataaatatatataaatatatacaa  
tatataaatatacaatatataaaatatataaatatatataatataattatatata  
atatatatattatatattatatattatatattatatataaatataatataattata  
tataatatataatttatatttttaatatataatttaaatatgtttaatatattatat  
attttaatatatatataatataatataattttaatatataatataatttta  
atatataaatatatatttatattanattataattaaatatattaattatattaat  
atatttaatatattaatatatttaatatattaatat

>IGR3320a

tttaaatatatattttaaatatgtttaatatatttatattttaatatataaat  
atattaatatataattttaatatataatataattttaatatataatataatttatt  
atattanattataattaaatatataatttatattaatatattttaatatataatata  
tattttaatatattaatatattttaatatattttaatatataattttaatatata  
taaatataaaaatatattttaatatatttatataatatataaacaacaccatcaccc  
acagttcccattacctgtttatagtcctgttccctccttggcttaacaccttctaag  
gtattatatacattaccttattatgtttattgttatgggttgagataatttcaaatttt  
actctgtatgatattgtttggcacagtattcaacaaaactgtatttgaatccaagt  
gtttattatggccttttaaaaaaataatatacatagantaaaaataaacataacgcta  
gccaaataaatatggattttgcactgtaattgtaaaaaatgtgtttgcactggtaac  
caaaggaaacaaaataaaaaataaattctcctatcccaaatgtcagtagtgcc  
caggttgaaaaactgctctggaggttaactgttatatac

>IGR3321a

aaaaaataatatacatagantaaaaataaacataacgctagccaaataaatatggattt  
gcactgtaattgtaaaaaatgtgtttgcactggtaaatccaaaggaaacaaaataaaa  
taaaaaaataattctcctatcccaaatgtcagtagtgccaggtgaaaaactgctctg  
gaggtaatctgttatatacatttccataactacactatccaatactgtaaccactagc  
cacgtgaggctatttacactgaaattaattaaaattaaataaaaattctgttccctcagt  
ctattaagtacatttttaagtgttcaatggccacacatggctacagaattaaacagcata  
gattatagaacatttcaatgattgcagtaagatttgggacagtgctttaggtatatat  
cacgcaaatagatgttctgtttacataaatagaatcacatactgttctatagtttg  
ttaatatgtctgaagattttccatctaagtatatataactaaaatatgtactaagtac  
atataactaaattttaagtttaattggctgtgatatagttcagttttataaattcata  
aatttaatttattacagcaatgtagtttaatttgccttttttaagtttatgtgtatgg  
actcatataatacatattttttatccagttattttac

>IGR3322a

ttccatctaagtatatataactaaaaatgtactaagtacatataactaaatatttaagt  
ttaatggctctgtgatatagttcagttttattaaattcataaatttaatttattacagcaa  
tgtagtttaattttgccttttttaagtttatgtgtatggactcatataatacatattat  
tttatccagttttttactcaatgctatgttttaagatatccatgttatttctgt  
atatctatagttattccttttaagtgcctttatggattccattggatgaccataccatag  
gttgtttatccatttgacttttggggcatttgagtttctccagtttggggatataatg  
aataattctggcatgaatattctgtactatttctgaaagtataattttatgcaggfta  
tcatgggaatggaattattggccactgaaatttactagattatgccactttcttaaaa  
tagttgcattcttcttattattttttgagatggagccttgcctctgccttaggc  
tggagtgcagtggtgtgatctcagctcactgcaacttcatctcctgggttcaagcgatt  
ctcctgcctcagcctcctgagtacatgggattacaggtatgtctatcatgccagctaa  
ttttgtatcttggtagagatgggggttcacatgttcc

>IGR3323a

ttattttttgagatggagccttgcctctgccttaggctggagtgcagtggtgtgatc  
tcagctcactgcaacttcatctcctgggttcaagcgattctcctgcctcagcctcctga  
gtacatgggattacaggtatgtctatcatgccagctaattttgtatcttggtagag  
atgggggttcacatgttccaggctagtcttgaactcctgacctcaagtgtctgcccgc  
ctcggcctcccaaagtgttgggattacagacgagagccacgttgcctggccgcattttt  
tcttaatagcagtatgtgagagttccctctaaactgcatcctaagcagtatcttgtat  
ttgtcagacttttaaagttcaaactcctgggtggcatgtggttgcctatccatagtttat  
ttgcacttcttgattatgaatgatacagaacacttcatatattatcagcttttga  
atattttctttatgagttcttttgagctctagaccattatctattgagttgttta  
ttaattttagaaagactttgtatattctggatacaagcctttattggttgcctatgtt  
gtgtagatatttccacctttagtggctgcttgccttttctgtctctttaatggtgatt  
tttgatttgtttgagaaatatcaacctttcttctaaga

>IGR3324a

ttttgagctctagaccattatctattgagttgtttatttaattgtagaaagacttt  
gtatattctggatacaagccttttattggttgcctatgttgcctgtagatatttccacctt  
tagtggctgcttgccttttctgtctctttaatggtgattttgatttgggttgcctat  
atcaacctttcttctaagattattcaataacagcaaagtaacaatgagaaactactgtc  
agttaaagtggtttagctcctcagttccaaggtatataatcacttaaatataacctgga  
aaaaaaaaacaaaatatttctctaaatcatggtctttgtaaaaaatgaattaaatcttc  
tctgttctctcatattgtattccaattntggatgtagccaccagtgagatagcaaatgtc  
taaatttggatacatcacttaaatatttagaacgtcattggtttctcaaacagtggaaa  
attcttgccatgcctacctatagactttgtataatgctattatcaatgctagctgatac  
taacttagaagatgattatacattttaaacagctcttctatcctggttctacaataag  
acactgactccaccacatactggatgacctagagcaagttaacttaatagacactgtgcat  
taatttactttgctataacaatgggataatatatcaattc

>IGR3325a

atagactttgtataatgctattatcaatgctagctgataactaactagaagatgattata  
catttttaaacagctcttctatcctggttctacaataagacactgactccaccacatac  
tggatgacctagagcaagttaacttaatagacactgtgcatttaatttactttgctataaca

atgggataatatcaattcatgttattattgcagctattgttcagatagaacaattgag  
agaatttataaacaataatgactaagcagatgagtagtttccaaattggccagcttaag  
ggagagaggtataagggtatagagttctagatgaaattataacatcacctcaaagagag  
agcaacttacctctggtcaggctttcttctgaagtgttcttgggagagggtgagcaga  
gtggtcaagagcctatctatttattcagtgaggctaaagcatagatgtccttgagangaag  
acttcttgggtcctttaggtaagtgaagtccttcaacttattcttttcaaaattgttc  
tgactattctgggtcccttttatttccatgtgaattttaggatcagcttgcaattctn  
caacaagcccagctaagattttagataggtttaccttgttcttgcctttaggagccaagc  
agcccatcttcaccattaagatgatgttagttgtgaga

>IGR3326a

aatgtaagtccttcaacttattcttttcaaaattgttctgactattctgggtcccttt  
tatttccatgtgaattttaggatcagcttgcaatttctncaacaagcccagctaagatt  
ttgataggtttaccttgttcttgcctttaggagccaagcagcccatcttcaccattaa  
gtatgatgttagttgtgagagtttctgtatctgtctttatcacattaagaatgttctctc  
tattcctagtctgtggagaggtttttgttgttgttgttgttgttgttgtt  
gacagagtcctactctgtcatccaggctggagtgagtaacaatctctgtctctgtctc  
tgcaacctccacctccgggctcaagtgttctctgcctcagtcctgagtagctggg  
attacaggtgtgcgccaccacatccagctaattttgtatttttagtagagacgggggtt  
taccgtgctggccaggctggttcaaatctgacctcaggtgatccaccgcgttggcc  
tcccaaagtgtgaggttacaggctgaaccatcatgccagcctagattttttttaa  
aatcataaataggtgtgaattttgtcaaatgccttctgcgtctgtggaaataatcat  
gtgtcctttattctatatagtccttacattaattgcatg

>IGR3327a

tttcaaatctgacctcaggtgatccaccgcgttggcctcccaaagtgtgaggttac  
aggctgaaccatcatgccagcctagattttttttaaatacataaataggtgttgaa  
tttgtcaaatgccttctgcgtctgtggaaataatcatgtgtcctttattctatatag  
tctcttaccattaattgcatgttaaaccaacctcatattcttgcagaaatctcacttggtc  
atggtgtatacattcttttacatattcctggatttagtttgcataaattaaggattct  
catgatgatgtcatgagggtttgtagtttctttttagatgtctttagcttggg  
attagggtataaacaatcttagatttagttgggatctgttctctcttatttctgaag  
actttgtgaaggattagcattttttgtttaaatttgataaaattcaccagtgaag  
ttatctgggcctagaattcttcttatgggaagattttacatttctaattcagtttctt  
cttttataggcctatttagattgttctgtatatttttagttcattttgtaatttga  
cctttntagggaactttccacttcatattagtgccctgttgttggcataaagatgtt  
acagcatttcttgaatttctataggatncagtagtcta

>IGR3328a

cttlatgggaagattttacatttctaattcagtttcttacttttataggcctatttag  
attgttctgtatatttttagttcatttttggttaattgtaccttntagggaactttcca  
cttcatattagttgcctgcttgttggcataaagatgttacagcatttcttgaattt  
ctataggatncagtagtctattcttcttctgtcccttattgggtaattttatcttct  
ctatttttcttggtcagtcctaaagggttgcattttgttgatctttcaataatca  
gcctttaggttcttgggttcttattttccatttctattttgttgatttctgtc

ttalccttattatttcattattttgcttgcttgcattttaacttgcacctctttt  
ttagttcttaaggtgagagcctgggttattgattagagacttttttaaatataggea  
tttaaagctatacattttcttaagtaccacttgaaactgcacccataaatttaata  
tattgtagttttgttttatttagttcaaaatataatttagtttcatngtgaattcttc  
tttgacctatgggttatttagaagaatgtgttcaatttccaaatattgaagatattca  
agatttcttctatttttatgtttaattccatgtggtg

>IGR3329a

tctaagtaccacttgaaactgcacccataaatttaatatattgtagttttgtttat  
ttagttcaaaatataatttagtttcatngtgaattcttcttgacctatgggttatta  
gaagaatgtgttcaatttccaaatattgaagatattcaagatttcttctattttta  
tgtttaattccatgtggttgacagcatattctgtatgagttaaacttttaaattatc  
aggacttggttgtgacctaacatatggcttctcctggaggatgtctgtgtgagctgaa  
aggaatgtgtattctgctgtttttgatggagaattctataggtgtcaggtgaaattggt  
tgatagcattgttcagatcttgtatattcctcctgatttctgtgtggtgtttaccag  
ttcataagagtgggtattcaaaatccagctattattgaattacctatttcttcttc  
agcactgtcaattgtgtttatgtcttccgggcttccattaaagtatatacatctata  
attattacatcttttgataatattgactctgttacattataaaatgttccctttgtct  
ctagcagatttcttattctaaagtattttgtcagatattaatacagccacccatct  
ctcttgtagttgtgttgcatggtacatctttacctct

>IGR3330a

tatgtcttccgggcttccattaaagtatatacatctataattattacatcttttgata  
tattgactctgttacattataaaatgttccctttgtctctagcagtttcttattct  
aaagtattttgtcagatattaatacagccacccatctctcttgtagttgtgttgc  
atggtacatctttacctctttttttttaagacagggtctaccctgttgccaggc  
tggagtgagtggtgcctcagctcacccaaacctctgcctccgggttcaagtggct  
ctcctgcctcagctcccaagtagctgagattacaggcacataccaccagccagataa  
ttttgtatttttagtagatagaggtctcacatgttggtcagggtgtgtcctcaactcc  
tggcctcaagtatccaccaccttggcctcccaagtgtgggattacaggtgtgaacc  
actgcgcctggcttaccttttttttttaaccttaaaaaccttttagattattg  
aatctaaagtgtgtcttgtatgtagcatgtattggatcttgtttatttattcaatct  
gaaaagctctgagtttgctaagaaaaatcaaggtggttcagtggtagagaatctcagagc  
agaagggttcagatagattgttagggatgatctcttg

>IGR3331a

tttttttttaaccttaaaaaccttttagattattgaatctaaagtgtgtcttgt  
atgtagcatgtattggatcttgtttatttcaatctgaaaagctctgagtttgcta  
agaaaaatcaaggtggttcagtgtagagaatctcagagcagaagggttcagatagatt  
gttagggatgatctctttagtggtgacataaagctgatactaaagactagaaggaat  
caaagtgtgaagaagggaagggaaggaaagagcattataatcaagagaacagacctg  
agtgataggagagcttgacattttgaagaactgaaagagaagctggttcatagtgagca  
aagggaatgtggtggcagatgaagggtagtatgctaaacaagggtgacactgcggaatct  
tgaagctatggtgaaaagtgttattttattgaaaaagtagtgtgaagtcattgaaatt  
ttgaagagtgaagaaacttgatccaattgtgtgtacaaaactgaatctaaaccttg

gtaagcaagaaatagcatattgtaggctgggcatggggtcacgcctgtaatcccagct  
cttllgggatgccgagggcgggtggatcgctgaggtcgggatttcgagaccagcctggcca  
gcatggtgaaaccccgtcttactaaaaatacgaacta

## &gt;IGR3332a

tgatccaatttgtgtgtacaaaatctgaatctaaaccttgtaagcaagaaatagcatat  
tgtaggctgggcatgggtggctcacgcctgtaatcccagctcttllgggatgccgagggcggg  
tggatcgctgaggtcgggatttcgagaccagcctggccagcatggtgaaaccccgtctc  
tactaaaaatacgaactagctggggatgggtggcaggtgcctgtaatcccagctactct  
ggaagctgaagcaggagaatcacctgaaccaggaggtggaggttcagttagccgagat  
tgcgccattgcatccagcctgggtaacagagtaagactccatctcaaaaaaaaaaaaaa  
aaaaaaaaaaaaaaaaaangaangcangaaatagcgtattgtaattttttcctaattc  
aaattaaatttgacttanatactcttccctgatgagctgggtgagaaatgtattgtcagtc  
actattagggtgtgtcacctcagaagttccaccaaactaacaaggttgctagaaaata  
gaaggaaaacttctaactttgagttgtcatggtcattgggctagtatgtggatgtttgt  
ccatatccacagtttcttaaaggatggtagtttctgcttctatgccactttgggggtc  
atgaaactggagatgacaagtcctgggtactcttttgggtg

## &gt;IGR3333a

tcagaagttccaccaaactaacaaggttgctagaaaatagaaggaaaacttctaacttt  
gagtttgcattgggtcattgggctagtatgtggatgtttgtccatatccacagtttctta  
aaggatggtagtttctgcttctatgccactttgggggtcatgaaactggagatgacaag  
tcttgggtactcttttgggtgtaccatggaacatcatttttaggtctaattctttctta  
gagatgtgcctgtgagtggtgtagtcagttctctttattatacttttcttttctc  
cctcttctgaccttcttctttgttttcagaaattactctagaatgtatactcttcttg  
ttaccattaaaaacttaacaggattttactttgatttttcaaaaagacacgaagtgaat  
tacctggattagcttcttctatgaagaaaaataaagcagcctaacagggttagagattgat  
agagtctactatcttaataagagagactaggaaactctctttagtagagtcatttgagt  
agaatcctgaaggcagtaaaagaaaaataacatttcacgcaaagggaataacaaatacaag  
gtgtctgggaatggagagtagttgggtgttttgaggaaaagtaaggtcagggtactgtg  
gctggaacgaatgaacaaggtaaggagcttttagtagatg

## &gt;IGR3334a

gagagactaggaaactctctttagtagagtcatttgagtagaatcctgaaggcagtaaa  
agaaaataacatttcacgcaaagggaataacaaatacaagggtgtctgggaatggagagta  
gttgggtgttttgaggaaaagtaagggtcagggtactgtggctggaacgaatgaacaagg  
ttaaggagcttttagtagatgaagtagccagatatcagagcatgcagaaccttgaaagtcg  
ggggaaggactttgaggttttactatgagtgagatcatagaagattttttagtagtag  
actacagagggggacaagggtcatgcaagaaaaaaccagactggacacctagatattgaact  
tactaaataaagacattaagccaactgttataaatatttcaagaactaaagacaacta  
tgtctaaagaattaaagtttgagaatgatgtcttacttaatagagaatatcaattaaaag  
ataaagtattttacaaccagatggatattctggttgacaatacaataactgaaatg  
taaaattcactaaagggtactcatctcttttgaacttgcaaaataaagaatcagtgaa  
cttaagatcacccagctctgagaaacagaaagaaaaagaatgcagaaaaatgaacagagc  
catacagattttgagaaaccatcatgtatcaatacat



>IGR3335a

cagatggatattctggttgacaaatacaataactgaaatgtaaaattcactaaagggact  
catcatccttttgaacttgcaaaataaagaatcagtgaacttaagatcaccagctga  
gaaacagaaagaaaaaagaatgcagaaaaatgaacagagccatacagattgtgagaaac  
catcacatgtatcaatacatgcataaggagaatcccaaaagaaaagaaaagaaaggga  
gaaagaatatttgaagatatgatggcaagaaactacaaatttgataacaaactaatct  
gcacactaagaaactagtgaactccaagtaggataaacctagagacacgtcatagtcaaa  
ctattgaaagccaaagatcaagaaagaatcttggccaggcacagtggctcatgcctgtaa  
taccagcactttgggaagctgaggtggacagattacttgagctcacaagtttgagagcag  
cctgggcaacatggagaacacctgtctctacaaaaatacaaaaattagccaggcgtggt  
gttgcctgctgtatcccagctactcgggaggctgagatgggaggaaatagagggtgtg  
gtgagccaaagattgtgccactgcacttcaggctgggcaatagaaccagacctctcaaaaa  
gaaagagagaggccgggcgcggtgctcacgcctgtaatcc

>IGR3336a

cctgtctctacaaaaatacaaaaattagccaggcgtggtgttgcctgtagtccca  
gtactcgggaggctgagatgggaggaaatagagggttgggtgagccaagattgtccac  
tgcacttcaggctgggcaatagaaccagacctctcaaaaagaaagagagaggccgggcgc  
ggtgtctcacgcctgtaatcccagcactttgggaggctgaggcggcgatcacgaggtca  
ggagatcgagaccatcctggctaaccggtgaaccccgtctctactaaaaatacaaaaaa  
ttagccggcctggtagnggcgcctgtagtcccagctactcgggaggctgaggcaggag  
aatggcgtgaacctgggaggcggagcttgacgtgagccgagatcgccactgcactcca  
gcctgggagcagagcgagactccgtctcaaaaaaaaaaaaaaagagagagagaga  
gagagagaatattgaaaatagaagagaaggcagcaaggcatgtcaataaaattaacag  
ctttcttttcattagaaactgtggataccacagaaggcagagggatgatgtattcaagt  
gctgaaagaaaaggactgtcaactaggaggtgtatttcagcaagctagtcttcaaaaa  
ttaagggtgaatttaaacattcccatgtaacaaaaacag

>IGR3337a

gaaagagaaggcagcaaggcatgttcaataaaattaacagctttctttcattagaaact  
gtggataccacagaaggcagagggatgatgtattcaagtgtgaaagaaaaggactgtc  
aactaggagttgtatttcagcaaaagctagtcttcaaaaattaagggtgaatttaaacat  
tcccatgtaacaaaaacagaattcttactagcagacatgccctataagaaatatgaaa  
gggggttcttttaggtgaaatgacaggacactaaatagtaactgaaatccacacagagaa  
ataaagagtactggtaaagataactctataggtaaatgtaaaagtcagtataaatattat  
tttgtttgtaacctttttcttatctgattcaaaagacaactacataaagcaataatt  
ataattatatatttaaatgtgtaaggatattctttaaagccaataataataaaagga  
gaggagaaggaatggagctgtacgggaacagggttttatattattgaaattacgtca  
atattactctgagctagattgctttaaagtaagacgttaattgcagctcccagggcaaat  
actaataaaaagaactaaaaaagtggtaaatagctaacaagtggtataaaatgntatac  
tagaaaaactaacacaaaagaaggcagtaaatgaaaggatag

>IGR3338a

tacgggaacagggttttatattattgaaattacgtcaatattactctgagctagatt  
gctttaagttaagacgttaattgcagctcccagggcaataactaataaaagaactaaaaa

aagtggtaaaatagctaacaagtgattaaaaatgntatactagaaaactaacacaaaaga  
aggcagtaaatgaaggatagaggaaacataaaggcatgtacagaaaacagcaaatggcaa  
atgtaaatctcatcagtaattccaagaaatgaaatgggcactacagtcaaaaggcataga  
ttaagagaatgaataaaataacataatccaactatgctatctatgagacaaatatata  
ttcagagaaacaaataggttgaaagtgaagatggaagaagatacagaataacaacaatt  
ctccaaaaagaactggagaggctgtgctagtattagacaaaatagactttgagacaaaa  
attgttactagagaccaagaagaacattttatattaaaaaggtcagtcacataaaaaaac  
ataacaattataaacatatgcacctaagagcagagcctcaaaataaatgaggcaaaaccc  
agcagaattaaaggaaaatagacaattcaacaataatgttgagatgtcaatacctcac  
tttgaaaaatggataacaacatataggtagatgatcactgg

>IGR3339a

agaacattttatattaaaaaggtcagtcacataaaaaacataacaattataaacatatg  
cacctaagagcagagcctcaaaataaatgaggcaaaaccagcagaattaaaggaaaata  
gacaattcaacaataatagttggagatgtcaatacctcactttgaaaaatggatacaaca  
tataggtagatgatcactggggaactagaagacttcagcaaacactataaaccaactagtc  
taatagacacctntaaaacactctccccaacagtgaaggcacattcttctcaatacac  
atttaaaattctttctccctttctttttttttttggacaggatattgtctgt  
ggctctaggctggagtgcagtgcatcacagctcactacagctgcaaagtcctgggct  
caagcagctcttctgctccagcctcccaatatctgggactataggtgtgcaccaccatg  
cttcgctaataattttgttttagtagagaaagggtctcactatgttcccagactggctct  
tgaactcttggcctcaagcagtcctccacctggcttcccagatagggaattataggcat  
gagctactgcagccaacctctagacctcatgtcagaccataaaataagtctcaataaact  
taaaagaattcaattatataaagtatgttttaactacaa

>IGR3340a

tagtagagaaagggtctcactatgttcccagactggcttgaactcttggcctcaagca  
gtcctcccacctggcttcccagatagggaattataggcatgagctactgcagccaacctc  
tagacctcatgtcagaccataaaataagctcataaaacttaaaagaattcaattatat  
aaagtatgttttaactacaacagtagaaattcgaaaccaataacaagaaaattgggaaa  
ttcactaatatgtggaatttgttaacatactctacataaccagtaggtcaataagga  
atcacaagagaaattagaaagtatttgagatgagtgtaaatgaaaatacaatataccaa  
aacttagaggatgtagctaaagcagcgcttagaggaaaatttatggatgtaaacacctgt  
atttaaaaaggagaaaaatattaattaaaacataatctttaccctaggaaatcagaaa  
agagctaacttgagccaaggcaaacagaaggaaataaagactancacagaaataaattaa  
gtagagaatagaacacagtaaaaaaatcagtaaaacaaaagtggatttaaaaaaaa  
tcaacaaaatgtacaaaccttggctaggttaaccaataaaaaatacagaggactcaaa  
taactcaactattagaagaaaatttgactaaatcttcc

>IGR3341a

caaacagaaggaaataaagactancacagaaataaattaagtagagaatagaacacagt  
aaaaaaatcagtaaaacaaaagtggatttaaaaaaaatcaacaaaatgtacaaacct  
ttggctaggttaaccaataaaaaatacagaggactcaataactcaactattagaagaa  
aatattggactaaatcttctgaccttacgtaggtaatgatctctcatatattacatcaa  
aggcatacagaatcaaaagaaaatttgatatattggttttaatatattggacttcat

caaaattgtaaaattctgatgttttacaggacgctgttgagaaagtcagacagactcca  
gaataagtaggtgggtggcgggggagggcagcggatattgcaaatcacatatctgaact  
gtatcaagaatatatagagaactgttacaactcaacantaaaagacaaccctatttatt  
tattttattttttttgagacaaagtctcgctcttgtccccaggctggagtgcagtgc  
gcacgatctcagctcactgcaacctccgctcccagggtcaagcgattctcctgcctcag  
cctcccaagtagctgggtattacaggcgctgccaccacgctggctaattttgtatttt  
tagtagagatgggggttcactatgttggccagggttggtct

>IGR3342a

gacaaagtcctcgctcttgtccccaggctggagtgcagtggcacgatctcagctcactgc  
aacctccgctcccagggtcaagcgattctcctgcctcagcctcccaagtagctgggtatt  
acaggcgctgccaccacgctggctaattttgtatttttagtagagatgggggttcac  
tatgttggccagggttggtctcgaactcctgacctcagggtgatccacctgcttgggcctcc  
caaagagctgggattacaggcgtgagccaccatgcctggccaacaactcaatttaaaagt  
gggcaaagaatttgaatagaaatttctcagaaaagatatacaaatggccaataaataca  
tgaaaagatgctcagcactcactaatcattagggaaatgcaaatcaaaaccacagtgagat  
accacttctatacagtaggatggctaaaaataaaaaagacagaaaattactagtgttg  
tgaagatgtggagagattagaaacttcattcattgctggtggggttgaatatgatgcag  
ccaccttgaagacagattggcagctcctacagttaaacatacagttaccatatgac  
ccaactatttccttggtacatacccaagataaatgaaaatatatccacacaaaa  
actgtacatgaatgtacatagcagaattatcataatta

>IGR3343a

aaacttcattcattgctggtggggttgaatatgatgcagccaccttggagacagattg  
gcagctcctacacagttaaacatacagttaccatatgaccaactatttcattcctggg  
tacatacccaagataaatgaaaatatatccacacaaaaactgtacatgaatgtacat  
agcagaattattcataaataaccagagagtagaaacaacccaaatgccatcaactgacc  
aataaataacaaaaatgtggtatatccatactatggaatatttccagcaaaataaaaag  
gaatgaagtgcctgatgcctgtaatatggatgaaacttagaaaaattataactaagtga  
aagaagccagacacaaaaggccacatattgttaattccatttatatgaatatctagaa  
tagccaaatgcatagaatagatattagactagtgttgccaagggtggaaaaggggga  
tcaggagtgattgctgatggatacgggctttctttgatatgacaaaaatgctctgga  
attagagtgatggctgtgaatttaaaactacgctttactttacatgaattttatggta  
tgtgaattatcagtaaagctgttaagaaaagtaagttcactcaattttacatttaagaca  
aaagatccccaattgtggtgatggaagaacatcctcact

>IGR3344a

gatacgggctttctctttgatatgacaaaaatgctctggaattagaggatggctgtgt  
aatttaaaactacgctttactttacatgaattttatggatgtgaattatcagtaaagct  
gttaagaaaagtaagttcactcaattttacatttaagacaaaagatccccaattgtggtg  
gatggaagaacatcctcactcttcatcaaggccagtacattaaccaagaacatttgatg  
aaggagtcgcagttcttgaatttctgatgaagaaacaactggttggctagcaaaagaa  
aagctgtacttttagaaatttatctttttgttcttagatggtctactaaactatgcttca  
aacataggattgtagaaatctgaatataatagtaattacaagaaatacaaatgcattgaa  
cttagcaattagaagagacatattcacttaattgttcgacaaatactcagtgatattata

tgccaggtctgctgtaatacatggggcatcagcaagcaactagacaagaatttccac  
cctcatggaactaatgttctagttaagggaaggtccaataaaatacactggtaagta  
gtttttgtatgttaaaatatattaggtgctatgaataaaatagagtagtgtagcaag  
gctgggggtgctgggaagttggaatttaattgttctcagat

>IGR3345a

acatggggcatcagcaagcaactagacaagaatttccaccctcatggaactaatgttct  
agttaagggaaggtccaataaaatacactggtaagtagttttgtatgttaaaat  
atattaggtgctatgaataaaatagagtagtgtagcaaggctgggggtgctgggaagtt  
ggaatttaattgttctcagattcaataaaaaatttagctatattgtttacaaaagacac  
ataaaactcgaataacagaaaggttgagtgtaaaggaattatataatgctagacaatt  
agaaaaagtagctgatattggcaatatttagtatcagacaaaatgatctttaaggcaat  
gatgttaaggatgctaaacttgctgggcattataatcacgcatataaatattaaaaca  
atacaaaattacaaggaagaattgataaagctgtaattattgtgggatatttaattgtac  
ctattcagtaaatagagcaaatcaaaaaataaagcaataagtaagcaaatcaagcac  
agtaagggtattgataattgaacaacacatttcacaagggtgatacaatgaacacatag  
agaacctgcatgttcattcaagtgcttatagaatatctttaaaaattccccacatac  
taggttataaaacaacctcaggttcccaaaataaggaac

>IGR3346a

atcaaaaaataaagcaataagtaaaagcaaatcaaaagcacagtaagggtattgataatt  
gaacaacacatttcacaagggtgatacaatgaacacatagagaacctgcatgttcatt  
caagtgttatagaatatctttaaaaattccccacatactaggttataaaacaacctc  
agggtcccaaaataaggaactgaacagaccatgttctctgataatcattccttgaagtca  
gaaagtaacaaaagtgacttttaaaagctcatgttttaaaatttaatatagttaaa  
tagctaatgaaaagttatgatgtcactatagaattagaaaatattagaatggaatgaa  
tataataaaatatatcagatcttgagggatgcatttagattgtcttggagcaatatt  
tacagccctattttattttattttattattattatactttaagttttagggtaca  
tgtgcacaatgtgcagggttagttacatatgtatacatgtgccatgctggtgcgctgcacc  
cactaactcgtcatcagcattaggtatatctcccagtgctatccctccccatcccc  
acccacaacagtcccagagtgatgttcccttctgtgtccatgtgttgcattgt  
tcaattcccacctatgagtgagaatatgcggtgtttggtt

>IGR3347a

gttacatatgtatacatgtgccatgctggtgcgctgcaccactaactcgtcatctagca  
ttaggtatatctcccagtgctatccctccccatccccaccccacaacagtccccaga  
gtgtgatgttcccttctgtgtccatgtgttgcattgttcaattcccacctatgagtg  
agaatatgcggtgtttggtttttgttcttgcgatagttactgagaatgatgattcca  
gtttcatccatgtccctgcaaaggacatgaactcatcctttttatggctgcatagtatt  
ccatgggtgatattgtccacattttcttaatccagtcattcattgttgacatttggtt  
gggtccaagtcttgcattgtgaataatggcgcaataaacatacatgtgcatgtgtctt  
tatagcagcatgatttatagtcctttgggtatataccagtaatgggatggctgggtcaa  
atgggtatttctagttctagatccctgaggaatcaccacactgacttccacaatggttgaa  
ctagtttacagttccacaacagtgtaaaagtggtcctatttctccacattctctccagc  
acctgttgttctgacttttaattgatcgccattctaactggtgtgagatgggtatctca

ttgtggttttgattgcatttctctgatggccagtgatgg

&gt;IGR3348a

tccctgaggaatcaccacactgacttcacaaatgggtgaactagtttacagttccacaa  
 cagtgtaaaaagtggtctatttctccacattctctccagcacctggtgttctctgacttt  
 ttaatgatcgccattctaactgggtgagatggatctcattgtggttttgatttgcaatt  
 tctctgatggccagtgatggtgaagcatttttcatatgtttttggctgcataaatgtct  
 tcttttgagaagtgctgttcattgctcttggccactttttgatgggggtgtttgttttt  
 tctltgaaattgttgagttcattgtagattctggatattagccctttgtcagatgagt  
 aggttgcgaaaaatttctccattttgtaggttgcctgttcactctgatggtagttctt  
 ttgctgtgcagaagccttttagtttaatcagatcccatttgtcaattttggctttgttg  
 ccattgcttttgggtgttttagacatgaagtccttgcctatgcctatgtcctgaatggtaa  
 tgcctaggttttctctagggttttatgggttttaggtctaacgtttaagctttaatcc  
 atcttgaattgattttatataaggtgtaagcaagggatccagtttcagctttctacata  
 tggctagccagtttccccagccacatttatataaatagggga

&gt;IGR3349a

gacatgaagtccttgccctatgcctatgtcctgaatggtaatgcctaggttttcttagg  
gttttatggtttaggtctaacgttaagtctttaatccatcttgaattgattttata  
taagggtgaagcaagggatccagtttcagctttctacatatggctagccagtttccag  
caccatttattaaatagggaatcctttccccattgcttgtttttctcaggtttgtcaaag  
atcagatagtttagatatgcggcattatttctgagggctctgttctgttccattggct  
atatctctgttttggtaccagtaccatgctgttttggttactgtagcctttagtatagt  
ttgaagtcaggtagcgtgatgcctccagctttgttcttttggcttacgattgacttggcg  
atgagggctcttttttggtccatatgaactttaagtagttttccaattctgtgaag  
aaagtcattggtagcttgatgggatggcattgaatctgtaaattaccttgggcagtatg  
gccattttcacgatattgattcttctaccatgaggatggaatgttttccatttgtt  
gtatcctcttttatttcttgagcagtggttttagtcttcttgaagaggctcttcaca  
taccttgaagttggattcctaggtattttattctctttg

&gt;IGR3350a

ggggatggcattgaatctgtaaattaccttgggcagtatggccatttcacgatattgat  
tcttctacccatgaggatggaatgttttccatttgttgatacctcttttatttcctt  
gagcagtggtttgtagttctccttgaagagggtccttcacataccttgaagtggattcc  
taggtattttattctctttgaagcaattgtgaatgggagttcactcatgatttgggtctc  
tgtttgcctgttggtgtataagaatgcttggtattttgcacattgattttgatcc  
tgagactttgctgaagttgcctatcagcttaaggagattttgggctgacacaatggggtt  
ttctagatatacaatcatgtcatctgcaaacaggggacaatttgacttcctcttttctaa  
ttgaataaccctttatttccttctcctgcccattgccctggccagaactccaacactat  
gttgaataggagtggtgagagagggcacccctgtctgtgccagtttcaaagggaatgc  
ttccagttttttccattcagtatgatattggctgtgggtttgtcatagatagctcttat  
tatttcgaaatacgtcccattgatacctaattttattgagagtttttagcatgaagggttg  
ttgaattttgtcaaaggccttttctgcactattgagata

&gt;IGR3351a

gagggcatccctgtcttgccagtttcaaagggaatgcttccagtttttccattca  
gtatgatattggctgtgggttgcatagatagctcttattttcgaaatagctccat  
ggatacctaatttattgagagtttttagcatgaagggtgtgaattttgcaaaggcct  
ttctgcatctattgagataatcatgtggttttgcattggtctgtttatatgctgga  
ttacattattgattgctgataattgaaccagccttgcacccaggatgaagccactt  
gatcatgggtggataagcttttgatgtgctgctggattcggttgcagttttattga  
agattttgcatcaatgttcatcaaggatattggctctaaaattctccttttggtgtgt  
ctctcccggccttggatcaggatgattctggtctcataaaatgagtagggaggattc  
cctcttttctattgattggaatagttcagaaggaaatggtaccagttcctcctgtacc  
tctggtagaatttggtgtaaatccatctggtcctggactcttctggttggaagctat  
tgattattgccacaatttcagatcctgttattggtctattcagagattcaacttctcct  
ggtttagtcttgggagagtgtatgtgctcaggaatttctc

>IGR3352a

aatagtttcagaaggaaatggtaccagttcctcctgtacctctggtagaatttggtgtga  
aatccatctggctcctggactcttcttggttggaagctattgattattgccacaattca  
gatcctgttattggctattcagagattcaacttctcctggttagcttgggagagt  
tatgtgtcgaggaatttaccatttctctagatttctagtttattgctgtagagggt  
ttgtagtattctctgatggtagttgtattctgtgggacagtggtgataccccctta  
tcatttttattgtgtctatttgattcttttctcttttcttattagtcttctagc  
ggctatcaattttgtgatcctttcaaaaaaccagctcctggattcattgatttttga  
aggggttttgtgtcttatttcttcagttctgctcttatttagttatttctgcctt  
ctgctagctttgaatgtgttgccttcttctagttcttttaattgtgatgttagg  
gtgtcagtttggatcttctgcttcttctgtgggcattagtgctataaattccct  
ctacacactgcttgaatgcacccagagattctggtagttgtgtcttctgtctcgttg  
gttcaagaacatcttatttctgccttcatttcacat

>IGR3353a

ttgctcttgcctttctagttcttttaattgtgatgttagggtgcagtttggatctttc  
ctgcttctcttgtgggcatttagtgctataaattccctctacacactgcttgaatgc  
atcccagagattctggtagttgtgtcttctgtctggtttcaagaacatctttat  
ttctgccttcatttcacatgtaccagtagtcattcaggagcaggtgtccggttccat  
gtagttgagcgggtttgagtgacattcttaacctgagttctagtttgattgactgtgg  
tctgagagacagttgttataatttctgttctttacatttgcctgaggagagcttactt  
ccaagtagtggtcaattttggaataggtgtggtgtggtgctgaaaaaatgtacattct  
gttgatttgggggtggagagttcttagatgtctattaggtccacttggtgcagagctgag  
ttcaattcctgggtatccttgttgacttctgtctcgttgatctgtctaatgttgacagt  
gggggtgttaagctccattattaatgtgtgggagctaaagtctctttaggtcactc  
aggacttgccttatgaatctgggtgctcctgtattgggtgcataatatttaggatagtt  
agctcttcttattgaattgatccctttaccattatttata

>IGR3354a

gttgactttctgtctcgttgatctgtctaatgttgacagtggggtgttaagctcctccat  
tattaatgtgtgggagctaaagtctctttaggtcactcaggacttgccttatgaatct  
gggtgctcctgtattgggtgcataatatttaggatagttagctcttcttattgaattga

tccctttaccattatttatagccttaaatgactaaatttgaaaggaagaaagcctggaat  
taatgagctaagctttgtaaggtaagtgaaaattctgtattgtatttaaggtcaagt  
gctgaaatcacittatttttaattgcaaaattgggttttcttccatttaacctgttg  
aacccaaatctgccatttgacctccttgggtctcttctacccctgaattgttagtgaa  
ctccagtgacatatatagtacaaacaggaagtatgctgaaatctgaggcaataaaatag  
gtttacaacctagtgttaattctagacagaattaatagtggtctggcatttagaatgagaa  
agtgggtggctgtttctcagttggaccagccttcagatatatattaatagctgtacatta  
tcgtttaattcagaagaaagtagcctggatgttaaagggttatgtgaacataatatgaaa  
aacagcatgtggaatagagacatagagaatgaaaaagaaa

>IGR3355a

ctagacagaattaatagtggtctggcatttagaatgagaaagtggtggctgtttctcagt  
tggaccagccttcagatatatattaatagctgtacattatcgtttaattcagaagaaag  
tagcctggatgttaaagggttatgtgaacataatatgaaaacagcatgtggaatagaga  
catagagaatgaaaaagaaaaaaacttcattggatcataaagcaacaaggctcacaactg  
gagcattctctctctgagaaatctgctctgacatccttctccttccccaaacctccaa  
taggtgtatcttccatttgtccatagtagcccgtgattcgtccactacagaagttggt  
tatatttaatttaattgtccattacatctatattgcttttataaactgtttccctca  
gtaagcaagactgatttttaaatcattttgcattttcaagcccaactgtggtgctgag  
tacttaatttgatctgtattgaatgaaattgaagttattgaaggaagaaaggatgaacta  
atgaattaaagcaattgattatatttttctctgtggccctgaggattagccctagag  
cacatatgtagaacatgcagacagatatacttgggttctgtatgaagataaatcttaact  
gccatgggctggcaagatggccgaataggagcagttctgg

>IGR3356a

gaatgaaattgaagttattgaaggaagaaaggatgaactaatgaattaaagcaattgatt  
atattttttctctgtggccctgaggattagccctagagcacatatgtagaacatgcag  
acagatatacttgggttctgtatgaagataaatcttaactgccatgggctggcaagatgg  
ccgaataggagcagttctgggtctgcagctcccagtggatcaatgcagaaggcaggtgat  
ttctgcatttccaactgaagtaccagctcatctcaacctatggagggcgacctgaagca  
gggtgggttgtctaccaggaagtgcagggttcggtgaacttttccatggtctttgc  
aacccatagaccaggagattccctcggttacctacaaccaggggccccgggttcaagca  
caaaactgggtgaccatttgggcagacaccgagataactgcaggagttttttcatacc  
ctagtggcacctggaacaccagcaagacagaacggttcactaccctggaaagggggctga  
agccagggagccaagtggctagctcagttggatcccacccccatgaagcccagtaagcta  
agatccactggcttgaattcttctgctgccagcacagcagttgaagttgaccaggaatgc  
tcaagcttgggtggggggcggtgggggggtgaggggggt

>IGR3357a

agcaagacagaacggttactaccctggaaagggggctgaagccaggagccaagtggct  
tagctcagtggtatccccccccatgaagcccagtaagctaaatccactggcttgaatt  
cttgctgccagcacagcagttgaagttgaccaggaatgtcaagcttgggtggggggcg  
gatgggggggtgaggggggtggggcattgccattactgaggcttgagtaggcaggttcc  
cctcacagtgtaaacaaagctgcctggaagttcaaaactggcgaggccaccacagctcc  
acaaagcctctgtagacagactgcctctctagattcctagttctctggacaggcatctct

gaaagaaaggcagcagccccagtcaggggttatagataaaactcccatctccttgggac  
agagcacttggggtaaggggcagctgtgggtgcagcttcaacagacttaacattgctgc  
ctgctggttctgaagagagcagtgatctcccagcacagccatagagctctgctaaggga  
tagactgcatcctcaagtgggtccccaaccccatgcttctgactgggagacacctccc  
agtaagggtcaacagacacctcatagggggagctccgcctggcctctggcgggtgcccc  
tcagggacgaagcttccagaggaaggaacatgcagcattc

>IGR3358a

agtggatctcccagcacagccatagagctctgctaagggatagactgcatcctcaagtgg  
gtccccaaccccatgcttctgactgggagacacctccagtaagggtcaacagacacc  
tcatacaggggagctccgccttggcctctggcgggtgcccctcaggagcgaagcttccaga  
ggaaggaacatgcagcattctctgtagcctctgctgggtgataccaggcaaacagggtct  
ggagtggacttccagcaaaactacaacagacctgcagcagagggacctgagtgttagaagg  
aaaactaacaacagaaagaaatgacgtcaacatcaacacaaaggacgtccacacagaaa  
ccccatecaaagggtcaccaacatcaaagaccaaggtagataaatccatgaagatgaggaa  
taccagcgcaaaaagggtgaaaattccaaaatccagaatgtcttctcctccagaggat  
cacaactctcaccagcaagggaactaaactggatggagaatgagtttgacaaattgaca  
aaagtaggcttcagaagggtgggtaataacaaattcctctgagctaaaggagcaagtcta  
acccaatgcaaaagaaactaagaaccttgaaaaaagggttagaggaattgctaactagaat  
aaccagtttagaaaaaagcataaatgacctgatggagctg

>IGR3359a

ggaactaaactggatggagaatgagtttgacaaattgacaaaagtaggcttcagaagggtg  
ggtaataacaaattcctctgagctaaaggagcaagttctaaccaatgcaagaaactaa  
gaaccttgaaaaaagggttagaggaattgctaactagaataaccagtttagaaaaagca  
taaatgacctgatggagctgaagaacacagcacaagaacttcacgaagcatacacaattt  
caatagctgaatcgaatgaagcagaagaaggatattagagattgaagatcaacttagtga  
aataaattgtgaagacaagattagaaaaaagaatgaaaagaaatgaacaaagcctcca  
ggaaatattggaactatgtgaaaagaccaaacctacgtttgattggtgtatctgaaagtga  
gggggaaattggaaccaagttgaaaacactcctcaggatattatccaggagaacttccc  
caacctagcaagacaggtcaacattaaaattcaggaaatacagagaacaccacaaagata  
ctcctcaagaatagcaacccaagacacataatcatcagattcacaaagttgaaatgaa  
ggaaaaaatgttaagtgcagccagagagaaaggctgggttaccacaaagggaagcccat  
cagactaacagtgatctctgcagaaactctacaagtcag

>IGR3360a

acattaaaattcaggaaatacagagaacaccacaaagataactcctcaagaatagcaaccc  
caagacacataatcatcagattcaccaaagtgaaatgaaggaaaaaatgttaagtgcag  
ccagagagaaaggctgggttaccacaaagggaagcccatcagactaacagtggatctct  
gcagaaactctacaagtcagaagagagtggggccaatattcatctttaaagaaaata  
attttcaagccagaattttatattccagccaaactaagctttataagtgaaggagaaataa  
aatcctttccagacaagcaaatgctgagagattttgtaccaccaggcctgccttataag  
agctcctgaaggaagcactaaatggaaaggaaaaactggtacaagccactgcaaaaac  
ataccaaattgtaaagaccatcaacactatgaagaactgcatcaactaatgggcaaat  
aaccagctagcatcataatgacaggatcaaattcacacataacattattaaccttaaatg

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.



taaattgggctaattgccccattaaaagacacagactggcaaattggataaagagtcaag  
acctatctgtgtgcaatattcaagagacctatctcacgtgaaaagacatacataggctca  
aataaggagatggaagaattttatcaggcaaatggaaa

>IGR3361a

acaggatcaaattcacacataacattattaaccttaaatgtaaattgggctaattgcccc  
attaaaagacacagactggcaaattggataaagagtcaagacctatctgtgtgcaatatt  
caagagacctatctcacgtgaaaagacatacataggctcaaaataaggagatggaagaat  
attttatcaggcaaatggaaagcaaaaagaagcaggggttgagtcctagtctccaataaa  
agagactttaagccaacacagatcaaaaaagacaagaggggcattacataacggtaaag  
ggatcaatgcaacaagaagagctaactatcctaaatgtttatgcaccaatacagggcac  
ctagactcataaagcaagttcccagtgacctacaaagagacttagacccccacataata  
tagtggaagactttaacaccccactgtcaatattagacagattaatgagacagaaaatt  
aacaagcatattcaggactgaactcagctctggacaaagtggacctaatagacatctat  
ggaaactctccaccccaatccacagaatatacattcttctcagcaccacgtcacacttat  
tctaaaattgaccacataattggaagtaaaacactcctcagcaaatgcaaaagaacagaa  
ataataacaaacagtttctcagaccacggtacaatcaaat

>IGR3362a

gaactcagctctggacaaagtggacctaatagacatctatggaactctccaccccaatc  
cacagaatatacattcttctcagcaccacgtcacacttattctaaaattgaccacataat  
tggaagtaaaacactcctcagcaaatgcaaaagaacagaaataataacaaacagtttctc  
agaccacggtacaatcaaatagaacttaggattaagaaactcacccaaactgcacaac  
tacttgaaactgaacaacctgctactgaatgactactaggtaaataatgaaattaagag  
agaaataaattctttgaaaccaatgagaagaagacacaatgtgccagaatctctgggac  
acagctaaagtgtgttttagaggaaaatttatagcactaaatgccacaggagaaaagtgg  
aaaagatctaaaattgacaccctaacatcacaaatgaaaagaactagagaagcaagagcaa  
acaaattcaaaagctagcagaagacaagaataactaagatcagagcagaattgaaggag  
atacaggcacaacccctccagaaaatcaaatcagtgaaatccaggagctgggttttt  
gaaaagaataacaaatagactgctaaccagactgataaagaagaaaagagagaagaatt  
gaatagacacaataaaaaatgataaaggggggtattccac

>IGR3363a

aagacaagaataactaagatcagagcagaattgaaggagatacaggcacaaaaaacct  
ccagaaaatcaaatcagtgaaatccaggagctgggtttttgaaaagaataacaaataga  
ctgctaaccagactgataaagaagaaaagagagaagaattgaatagacacaataaaaaat  
gataaaggggggtattccactgatccacagaaatacaaaactaccttcagagaatactat  
aaacacctctatgaaaataaactagaaaatctagaagaatggataaattcctggacaca  
tacacctcccaagactaaaccaggaagaagttgaatctctgaatagaccaatgacaagt  
tctgaaattgaggcagtaattaatagcctgccacacaaaaaaagcccaggaccagatgga  
ttcacagccgaattctaccagaggtacgaagaggagctgggtaccattccttctgagacta  
ttccaacaatagaaaaggagggaatcctcctaactcatttatgaggccagcatcatc  
ctgataccaaaacctggcagagacacaacaaaaatgaaaatttcaggccaatatccctg  
atgaacattgatgcgaaaacctcaataaaataatggcaaacggaatccagcagcacagc  
aaaaagcttatccaccacaatcaggttggtttatttctg

>IGR3364a

gggaatcctccctaactcattttatgaggccagcatcatcctgataccaaaacctggcag  
agacacaacaaaaaatgaaaatttcaggccaatatccctgatgaacattgatgcgaaaac  
cctcaataaaaataatggcaaacgaatccagcagcacagcaaaaagcttatccaccacaa  
tcaggttggctttatttctgggatgcaaggctggttcaatatatgcaaatcaataaacat  
aatccatcacataaacagaaccaatgacaaaaaccacatgattatctcaatagatgcaga  
aaaggcctttgacaaaattcaacacccttcatgctaaaagctctcaataaactaggtat  
tgatggaacacatctcaaaataataagagctattttgacaaaccacagccaatatcat  
actcaatgggcaaaaagctggaagcattcctttgaaaaccgacacaagacaaggatgcc  
tctctcaccactcctattcaacgtagtattggaagtctggccagggaatcaggcaaga  
aaaagaaataacgggtattcagataggaaaagaggaagtcaaatgtctctctttaga  
tgacatgattgtatattagaaaaacccatcatctcggctgggcacagtggctcacgcct  
gtaaccccagcactttgggaggctgaggcgggtggatcac

>IGR3365a

acgtagtattggaagttctggccagggaatcaggcaagaaaaagaaataacgggtattc  
agataggaaaagaggaagtcaaatgtctctctttagatgacatgattgtatattag  
aaaaccccatcatctcggtgggcacagtggctcacgcctgaacccagcactttggga  
ggctgaggcgggtggatcacaaggtcaggagatcagaccatcctggctaacacagtga  
accctgtgtctactaaaaatacaaaaaaaaaaaaaaattagccaggtgtggtggggca  
cctgtagtcccagctacatgggaggctgatgcaggagaatggtgaaaacccaggagggtg  
agcttgcagcgagcctagattgtgccactgcactccagcctgggtacagagagaggctc  
catctcaaaaaaaaaaaaaacaaaaacccccccccccccccatcgtctcagcccaaa  
atctcctaagctgacaagcaacttcggcaaggctcaggatacaaaaccaatgtgcaaa  
aatcacaggcattcctatacaccaataatacacaacagccaaatcatgcatgaacatcc  
atgcacaattgccacaagagaataaaatacatgggaataaaatttacaagggatgtgaa  
ggacctctcaaggagaactacaaccactgccccaggaa

>IGR3366a

aacttcggcaagggtcaggatacaaaaccaatgtgcaaaaatcacaggcattcctatac  
accaataatacacaacagccaaatcatgcatgaacatccatgcacaattgccacaaga  
gaataaaatacatgggaataaaatttacaagggtatgtgaaggacctcttcaaggagaact  
acaaaccactgccccaggaaataagagaggacacaacaaatggaaagacattccatgct  
catgaataggaagaatcaatatcgtgaaaatggccatactgccccaaataatttatagat  
ccagtgtatccccatcaagctaccattgactttcttcagaattagaaaaaactactt  
taaatttcatatggaacaaaaaagaacctgtatagccaagacaatcctaagcaaaaaga  
acaaagctggaggcatcatggtacctgacttcaactatactataaggctacagtaagca  
aaacagcatggcagtcgtacaaaacagatatatagaccagtggaaatagaacagaggcct  
cagaaatagcaccacacatctacaacctctgatctttgacaaacctgacaaaaacaagc  
aatgggggaaggattcctatttaaaaatggtgttgggaaaactggctaaccatatgcag  
aaaactgaaactggacctctctttacacctatacaaaa

>IGR3367a

caaaacagatatatagaccagtggaaatagaacagaggcctcagaaatagcaccacacatc  
tacaacctctgatctttgacaaacctgacaaaaacaagcaatgggggaaggattccta

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted April 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

tttaaaatggtgtgggaaaactggctaaccatatgcagaaaactgaaactggacctct  
tctttacaccttatacaaaaattaactcaagatggattacagacttaaatgttagacct  
aaaccataaaaaccctagaagaaaacctagacaatgccattcaggacatagggcatgggca  
aagacttcatgactaaaacaccaaagcaatggcaacaaaagccaaaatagacaaatggg  
atctaattaaactaaagagcttctgcacagcaaaagaactatcatcagagtgaacaggc  
aacctacagaatgggagaaaattttgaatctttccatctgacaaaagggtaatatcca  
gaatctacaagggaactcaacaaatttacaagaaaaaacaaccccatcaaaaagtgggc  
aaaggatatgaacagatgcttctcaaaggaagacttttatgcagccaacaaatatatgaa  
aaaaagctcattatcactagtcattagtgaatgaaaatcaaaaccacaacgagatacca  
tctcatgccagttagaatggcaatcattaaaaagtcagga

>IGR3368a

caaatttacaagaaaaaacaaccccatcaaaaagtgggcaaaggatatgaacagatgct  
tctcaaaggaagacttttatgcagccaacaaatatgaaaaaagctcattatcactag  
tcattagtgaatgaaaatcaaaaccacaacgagataccatctcatgccagttagaatgg  
caatcattaaaaagtcaggaaacaacagatcctggagaggatgtggagaagtaggaatgc  
ttttacactgttgggtgggagtgtaaattagtccaaccattgtggaagacagtgtggtgat  
tctcaaaaatctagaacctgaactaccatttgaccagcaatccattactgggtatat  
acccaaaggattataaatcattctactataaagacactgcacatgtatctttattgcag  
cactattcacaatacaaaagacttgaaccagcccaaatcaaatgtccatcaatgataga  
ctggataaagaaaatgtggcacatataccatggaatactatgcagccataaaaaagga  
ttagttcatgtccttctgtgggacatggatgaagctggaaaccagcattctcagcaaaact  
aacacaggaacagaaaatcgaacaccgcatgttctcactcataagtaggagttgaacaat  
gagaacacatggacacagggagaggaacttctcacactgg

>IGR3369a

acataacacatggaatactatgcagccataaaaaaggattagttcatgtcctttgctg  
ggacatggatgaagctggaaaccagcattctcagcaaaactaacacaggaacagaaaatcg  
aacaccgcatgttctcactcataagtaggagttgaacaatgagaacacatggacacaggg  
agaggaacttctcactggggccagtcaggggtgggggactaggggagggatagcatta  
ggagaaatacctaaggtagatgttgggtgatgggtgcagcaaaaccacatggcacatat  
atacctatgtagcaaacctacacattctacacatgtatccagaacttaaaatatata  
tataaatatcttaactgcaaaaagtgaaggaactgcttgacaggtagtactccatt  
tctatccaaggagatgttctggcataaagtagacaaccaacaatggggatactacagag  
tcacctcatttttgaattcagtaaaacttattaacatctgttacatactaggatgctg  
tactaagcaaaaaagtgaacatttatggcgtgtgtccagaatatcttatggtctatttg  
gggatgggtggtgtagactagatatttaacagacatcttcagttgattgtgtggcaagt  
cataaaatggatgttcagagtactgtgagagctcagggaa

>IGR3370a

tcagtaaacttattaacatctgttacatactaggatgctgtactaagcaaaaaagtgaaa  
catttatggcgtgtgtccagaatatcttatggtctatttggggatggtggtgtagacta  
gatatttaaacagacatcttcagttgattgtgtggcaagtcataaaatggatgttcagag  
tactgtgagagctcagggaaatgtactcaaatgctggattataattttataatcactgt  
agctgaccaaaagggcaacttctaatttgactgcaatatgtttcttttagttataccatc

ataaaaacctgttttagataatcttgggaagattttacactcttctcttttctttttt  
tttttttttgagacagctcttgctctgtcaccctggcttgagtgcagtagcatgatttcg  
gctcactgcaacctctctctctgggtcaagtattctctgccccagcctctgagta  
gctgggattacaagcatccgccaccatgccctgctaattttgtatttttagtagggacag  
ggttcaccatgatggctaggctggctcgaactcttgatgtcaggtgatctgcctgcct  
cagcctcccaaatgctgggattacaggtgtgagccaccatgaccggctgatttcacact  
cttagactttgctgcgctaactcatgttaggaaaatcttt

>IGR3371a

ccaccatgccctgctaattttgtatttttagtagggacagggttcaccatgatggctag  
gctggctcgaactcttgatgtcaggtgatctgcctgcctcagcctcccaaatgctggg  
attacaggtgtgagccaccatgaccggctgatttcacactcttagactttgctgcgctaa  
ctcatgttaggaaaatctttctctgttgacactattgccagggtcctgtctttgacttt  
ggctagcatgggagaatccttcactgactgctgtaaaaataagctttgtaaattccttca  
attatttgtaagagccttgactaggagtagacgtctaggctccaattctgatctgcc  
cctcttttctatatgaccttgacctaaagttccttgattactttgggaatcagtttctt  
atctgaagaatgggaaacaaaacattggctggacttttctcttgggtattgtgaaggca  
gatgagatgatataacctgtcgaaattatcaggggaaggtataagttatctgggactctag  
tgtacattttaactatggctcagcgggtgtaaaacataacattgtcatgaaacatgttagg  
aagcagatgtgatcgatgaatgtgaattgtgagtgtgagaggtaggacaactgtctntctg  
tctgtgctagagaccttgggactagtgggtgatgaaagg

>IGR3372a

cgaattatcaggggaaggtataagttatctgggactctagtgtacatttaactatggtc  
agcgggtgtaaaacataacattgtcatgaaaacatgttaggaagcagatgtatcgcatga  
atgtgaattgtgagtgtgagaggtaggacaactgtctntctgtctgtgctagagaccttggg  
actagtgggtgatgaaagggtgggtgtgggttttctccaccctaattcttattctcttctg  
attctaattctggacagtggtcaaattctacacgggttngtgacagtagttgaaaaagg  
gattttagagcttctctaagcgacctccctgattgctagccatttctaccctctcttc  
ttccaatgtccagactcctctcacaaacaagcctagtgaatctgccaactttaagaag  
ttgttagaggaagaaaggcgaggaaagcttgatacaaggcatcaaagaccaagaaggag  
acattgagtagtgccttgaggactctctggaccgtctggaaaactgggaggtctatgag  
ggcctctgctgtgagaggggtatcaaactcattgctgtgctctaaatgttgtgtcccc  
tggaattcatatgtcaaatcataacctgcaagggtgatagtattagaagggtgaggtcttt  
tgggagggcatttagtccccctgtcaagagacccaagaga

>IGR3373a

ggactctctggaccgtctggaaaactgggaggtctatgagggcctctgctgtggagaggg  
tatcaaacctattgctgtgctctaaatgttgtgtccccctggaattcatatgtcaaat  
cataacctgcaagggtgatagtattagaagggtgaggtcttttgggagggcattagtgcct  
tgtcaagagacccaagagagcttctgacctctccactatgtgagaacacagctagaa  
ggctccatattgtgaaccagaaagcaggctcttaccagacagtgaatctgctgggtgcctt  
catcttgacttcgagcctccaaaactgtgaaaaataatttctctgtttataagtcac  
tcagtcaaagggtattttgttagagcagcccggttagacaaagacacctgtaaaaatggga  
aaggaggtggatgggggtgaaagggtgcttagggctcttgagagaccttcagatccct

gataatatgaatgcttgggaccttggccttgaagggccagatttggttgagaaagtattc  
cagtcctcaaacctggcccttaaatgcacctctgggtctctcagtggtacagttatat  
tgaacacttattttattgatggctaattaggtgctaggcattaagaccattatttatat  
tacttttgataatttttattaaatggctatagaaaaaa

>IGR3374a

ccttggccttgaagggccagatttggttgagaaagtattccagtcctcaaacctggccct  
taaatgcacctctgggtctctcagtggtacagttatattgaacacttattttattga  
tggctaattaggtgctaggcattaagaccattatttatattacttttgataattttta  
ttaaattggctatagaaaaaattaaagtattttctcagtccttcatcatatctgaattatt  
gcactcactttgattaattcatgggacattttctaatagtttgtagttattgccttt  
ggaaagtctcttttctgtattttggcatgattagcattaatgtttgtactcactgt  
ttctgggtcagtagtgatacatgtggaaaaatgaattaatafatgccccctctttgg  
tagagtgtagtctattaaaggaaaatttaaagttaaatcagtgattttaatatggtagt  
ggtagtgcaaaagtctgggtggcaacacagaagacgcaattaactctgctttaggacagag  
aggattgagagttcacaaaggaaaggactctgaattagaatttcagtagacagtggtag  
taagagaagtttaggctgatgctgttcatgtgcaaatatacagtaaaaaaattacact  
gtattttgagaacagcaataatttttctattagaagaac

>IGR3375a

gcaacacagaagacgcaattaactctgctttaggacagagaggattgagagttcacaaagg  
aaaggactctgaattagaatttcagtagacagtggttagtaagagaagtttaggctga  
tgctgtttcatgtgcaaatatacagtaaaaaaattacactgtattttgagaacagcaata  
atttttctattagaagaacataaaaattgaaaaaggaaactatggtgttcaagatgtta  
atatatgcaggcttgattatggagggtcaggtggatcatgacatagaacttgattttg  
ctttgttaggcagttctcaaaactaattgtgcataggaatcacctgaaaatcttgaaaa  
gtacagatcttgattcagtaagttagtagtacagcctgagagtcgtatttctaacaatct  
ccctgctacactgggagtagcaaggatgtacagaatagaaagcactgtaagggttaatca  
ggggagtgagccagttaccttgacatgatagaaagatgactggaagagaaacgctgttt  
ctttccagcccatagaaattgaattgttaccgtgttacaagtcctgtgtaagggtggct  
tccctcatagagcttgcatgtgaggaggaatgttctgagagataagaagctgttgaa  
tggtttatgtttgtcatttgtgccaaccaagaaaaggact

>IGR3376a

tggacatgatagaaagatgactggaagagaaacgctgtttcttccagcccatagaaat  
tgaattgttaccgtgttacaagtcctgtgtaagggtggcttccctcatagagcttgca  
tgtgaggaggaatgttctgagagataagaagctgttgaatggtttatgtttgtcatttg  
tgccaaccaagaaaaggacttttgttccagttctgaggggtgaaggaggtgggcataagg  
agtggggctagtgcctacagccagaggagactggacttaagcgagagcctgttgctctg  
tgctccccaggcaccacagaagcagcagaggctttctgtaggtactaccatggcaagag  
ggctccacagcttctcatcactcacttgggaagaggatgatgagtgggacatcatcaggta  
ttataatgtcatgtctgaggaggaaatcaaaggatgaaggagattgtgaagcccaaagt  
aagtttctcagttggttctcaccacattttccctctgccacttctgagacctacctgc  
tgtcattatttttagagaaactaaaggaaaaagctggtagcagagttgcaagcagatttat  
ttttaatgacctggctctccagaagaaataatcattatgtattatttggtacctca

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

gatgagaattttaaaaatctctttaaattttattaatttt

&gt;IGR3377a

accacattttccctctgccacttctgagacctaccttgctgtcattattttagagaaac  
ttaaggaaaaagctggtagcagagttgcaagcagattatttttaaatgacctggctctc  
cagaagaaataaatatcattatgtattatttggtacctcagatgagaattttaaaaatct  
ctttaaattttattaattttcaacattttatcttagttttaagattgcatatggctttt  
tagggtttggtgcctttttcttttaattgacataattgtatatatttatggggtacagt  
gtgatattttgatatgtatatacaatgtgtaatgattaaatcacggtaattagcatatct  
atcacctcaaacatttatctgtgtgtgtggaacattcaaaatcttctctctagatatg  
tgaaaataaaaaattaattgttaattatattacctacagtgtcatagaacactagagc  
ttattccctctatctagcttttacatttgatctattaaccaacctttggctatcccacc  
ctttctcttatacttcctgacctctagtaaccactattctattctctctatgaaatcaa  
tttttttagcttcaatatgtaagtgagaccatgtgctatttatacttctctgctggct  
taatttcccttaacataatgtcctccaggtcatccatgt

&gt;IGR3378a

ttacatttgatctatfaaaccaacctttggcctatcccacctttctctatacttccctg  
cctctagtaaccactattctattctctctatgaaatcaatttttttagcttcaatatg  
taagtgagaccatgtgctatttatcttctctgcctggcttaatttcccttaacataatg  
tccccaggctcatccatgttgctgtaaagagagaatttcattcttttgtgggtaaat  
aatatttcataatatataaccagattctctttatccattcatgttaatggacacttacgt  
tgattccataacctggctattgtgaagagtgcctacaataaacatgggattgcagatatt  
ctttgacataactaatttcccttcccttggatatgtacctagcggtaggattgctggaaca  
taaagtagttctatttttagtttttgagaacctccataatgttttctataatggcttta  
ttaatttacattctaccaacagtgataagagttcacttttctccacagccttgccagc  
atttgttatttttgtcttttttaaaatagggtgtgagaaaatatcttattgtggttttg  
tttgcatttgcctgatgattagtgtgttgagcatttttcatataacctgttggccattt  
ctatgtcttcttttaagatgtctgttcagcttatttgctt

&gt;IGR3379a

cagtgataaagaggtcacttttctccacagccttgccagcatttgattttttgtcttt  
tttaaaataggtgtgagaaaaatattctattgtggttttggttgcaattgacctgatgatt  
agtgatgttgagcatttttcatataacctgttggccatttctatgtcttctttaagatg  
tctgttcagcttatttgcctattttttaatcggattattattttttgctattgagtt  
gtttgagttctttgcataattctggctatcaattcctgtcagatgaatagttgcaata  
tttctccattctgcagggtgtctcttcactctgttgattgtttctttgctgtggaga  
agggtttttgttgatataatctcattgtttattttgcttttgttgacctgtgcacaa  
aagagatccttgccataaaaatctttgccc aaaggatatgaacagacacttctcaaaaga  
agacatttatgcagccaacagacatatgaaaaaatactcatcatcactgggtcatcagaga  
aatacaaatcaaaatcacagtgagataccatctcacgccagttagaatggcaatcattaa  
aatgtcaggaacaacagatgctggagaggatgtggagaatatggaacgctttacactg  
ttgtgtgggagtgatatattagtccaaccattgtggaagaga

&gt;IGR3380a

gacatatgaaaaatactcatcatcactgggtcatcagagaaatacaaatcaaatcacag  
tgagataccatctcacgccagttagaatggcaatcattaaatgtcaggaaacaacagat  
gctggagaggatgtggagaaataggaacgcttttactgttgggtgggagtgtatattag  
tccaaccattgtggaagagagtgtggcgattcctcaaggatctagaagaaataccattg  
accagccatcccattacttgggtatatacccaaaggactataaatcatgctactataaa  
gacacatgcacacatatgtttattgcggcgctattcacaatagcaaagacttggactaa  
cccaaatgtccatcaatgatagactggattaagaaaatgtggcacatataccatggaa  
tactatgcagccataaaaaagggatgagttcatgtcctttgtagggacatggatgaagct  
ggaaaccatcattctcagcaaaactatcgcaaggacagaaaatcaaacactgcatgttctc  
actcataggtgggagttgaacaatgagaacacatagacacaggagaggaacatcacact  
ctggggcctatcatgggggtgggggctgggggagggatagcattagtaggagaaatacct  
aatgtaaatgatgagttgatgggtgcagcaaaaaacatg

>IGR3381a

aactatcgcaaggacagaaaatcaaacactgcatgttctcactcataggtgggagttgaa  
caatgagaacacatagacacagggagaggaacatcacactctggggcctatcatgggggtg  
gggggctgggggagggatagcattagtaggagaaatacctaataatgaaatgatgagttgat  
gggtgcagcaaaacaacatggcacatgtatacctatgtaacaaacctgcatgttgtgcac  
atgtaccctagaacttaagataataaaaaaagaataaaatataataaaaagtaagtc  
ttggtgaaaaaaacaaaacaaaaaaactttgccagaccaaatgtctagaagtg  
tttcccaatattttctctcgtagttcataatttggggcttacattaaagtagttca  
ttcattttgagttgatctttgcatgtggtgaaagagaggggtctagtttcgttattctgc  
atgtggatattctgtttccagtagcatttatttaagaggtattccttcccagtagt  
gttttggcatctttgttgaatacagttggctgtaatatatgaattatttctaggttc  
ttgttctgttctattttatgctagtaccatgctgggttgtttagcttctgaatctg  
taatgtttatgtcttttaccaaatttgaataatttgggt

>IGR3382a

cagtaccatttatttaagaggtattccttcccagtagtgttttggcatctttgttgaa  
aatcagttggctgtaaatatatgaatttatttctaggttcttgttctgttctatttta  
tgctagtaccatgctgggtttgttagcttctgaatctgaatgtttatgtctttacc  
aaatttgaataatttggcatttcttctagtagtttttctaccacattctgttt  
ttcttttctgggattccttctacacatatgaagaccttcattgttctgtatagttc  
cctgaggctctgttaatttgttctcttctcttcttctcagattatataatccatt  
gtctactgctaatactcaatgattctccctctgtcatctctatttcatgttaacccat  
ctattaaagttttaaattcagatactgtattttcagttctataatttttagttaattct  
ttattgttcttctgttcttttctgaaactgtcttcttctactaactatgagtatta  
ttttctttacgtcattgaacgtggctctaattaaccactctgaaatccttgtctgtgaa  
ttccaacatctgttcatcttgggttgatctctgtgtcttttcttggaaataggtca  
catgtttctgtcttccatgtcaagcaactttctattg

>IGR3383a

tttctgaaactgtcttctttcactaactatgagtatttttctttacgtcattgaa  
cgtggctctaattaaccactctgaaatccttgtctgtgaattccaacatctgttcatct  
ttgggttgatctctgtgtcttttcttggaaataggtcacatgtttctggctctcaca

tgtcaagcaactttctattgtatcctgggtgctactgagggaaactccagattctgttata  
ttcctttgaagaatgttgcttgaactcctgacctcaagtgtaccacccaccttggcttc  
ccaaagtggggaattacagacatgagccaccatgcctggccggaagaatgtgtgtgtg  
ttaattaccaagcaattaacttgggttgacacaaaactgcaaactgtttttgtgcagtat  
atttcttttattcctggctgggctacttgcagtataacctacatatgtgtgttttagcag  
tctgccggagatttgggcagagttacacacagatggagtgtctccatgctcctctttt  
actgggatttcccttttacttttcagaatttggcttgcctcagactctgtaactctgata  
tttaggttaagaaaacttgggttttctatcaaaatttagcagctgtatatgccatcaac  
tatggtatgtcctgaggctaatagtcattttaaaaacagg

>IGR3384a

agtttacacacagatggagtgtctccatgctcctcttttactgggatttcccttttact  
tttcagaatttggcttgcctcagactctgtaactctgatataggttaagaaaactgg  
gttttctatcaaaatttagcagctgtatatgccatcaactatggtatgtcctgaggcta  
atagtcattttaaaaacaggaaatcacctgtactgttctcttcattcaagggtcaactt  
ccaccattatctgcctgctttgttactctccattgacttctactaattgtattttgt  
attttatccagagttatagttgtatctgtgtgtgggtcactgtgatagaaaatattc  
aaccatattttcacatcttttatttttaataaaaataatttactcatagtaattttta  
ttcttatgattgatataatttgggttcaatttgatgtattattccaggtaattttctgta  
tttattattttatatttctgttttactaggatatacttgggaattggccattctaggt  
taactccattctttgatttttcttcttcaaggattccaattataacctatgttgccttc  
tttgcgattctttatattatcactatttctggccctgtttacctctgtgttcatttt  
gttccattttctgacttttctcatcttctctgtattgt

>IGR3385a

tgttttactaggatatacttgggaattggccattctaggttaactccattctttgatttt  
tcttcttcaaggattccaattataacctatgttgcctcttttgcgattctttatatt  
atcactatttctggccctgtttacctctgtgttcattttgttccattttctgactttt  
ctcatcttctctgtattgttttagtacagtttggtcatactcttcttctttaggcac  
attataatttagtattgtttctacgattattttatcattttcttcaataactttctga  
gtttgatcagtttctattttacatcttttgttgcataatccattccgagttttatatt  
tctgatttttggcattcttccatactacagttgtttgcttaattataattaatct  
tactgtattttgttatagttttctcttttttttggataggcaggattgtttgttg  
tgttttcaactcctgaaaaattttgattatattttatgttttctatttataagtaactta  
tgtggatgttgggtttaattttattttgttgcctatgtttattgtgttggattttc  
ctgaaccagtgatcttgagtcactgttcttttatttctatagtgaatgcagttttt  
caattaaaggtaacttttatggtatgtcttcttcaaattgt

>IGR3386a

ttttgattatattttatgttttctatttatagtaacttatgtggatgttgggttaatt  
ttattttgttgttccatgtttatttgggttggattttcctgaaccagtgatcttgagt  
caactgtttcttttatttctatagtgaatgcagtttttcaattaaaggtaactttatg  
gtatgtcttcttcaaaattgttcttaattgtataatttaatagggtcttactctcagcc  
acttcattctcttaccaccacacctccaaaggacagttcacttttcatggttctcttt  
caccacaggaacagtgccttcttatactatctctgtgtccttacaagctcttgtgtt



aaaatatccataagccagtcctctgatgcactaagtcagatgtctctctgtactttt  
ccactcagggtggagccctttcctctgaaagcaggaccttagatgatatatatgttaca  
ccacattaaaagcacactgcatacttactcttctgcagtcagactgggtctttgca  
tagttgtcactggagtactctgctgacatttaattattttattcacttctaagaaaac  
agaaatttgactattctgtgttcccgggttacaacgtaggcataaataatgggtacttt  
tttctttgttggtggttttcagaaatttatgtagttaa

>IGR3387a

atcatttactcttctgcagtcagactgggtcttgcatagttgctcactggagtactc  
tgctgacatttaattattttattcacttctaagaaaacagaaattgtactattctgt  
gtttcccgggttacaacgtaggcataaataatgggtactttttcttgggtggtttt  
cagaaatttatgtagttaaattgcttttagaaggatgtctttctatgacacctgtt  
acatttcaataatcagtgctactaaccagaacttttcagctgttgaatttgcctttc  
ttttcagcaaatgacatatgctatgcatgaatgttaaaatagctgaaaagaattgcctgt  
atttaaatattaaaagaattgcctgtatttaataactaaaagaatcacctatatttaag  
aattgccttttattgaataaaataaataattgcctatgtttaatgaaatagctgaaa  
aattgcctatatttaaatatttaaacataaaatctactatttttatgttaagtattt  
ttttatcaataactatttagcccttactagatcatcccttgagagcagtgccctcttgg  
aaatagtcaagggtggaagaggcaagcttatttgaaaaaactgtatcacttctactgt  
catactttataaaacattttatttagaacatctcaacagg

>IGR3388a

ttaaatacataaactactatttttatgttaagtattttttatcaatactcatttag  
cccttactagatcatcccttgagagcagtgccctcttggaaatagtcagggtggaag  
aggcaagcttatttgaaaaaactgtatcacttctactgtcatactttataaaacatttt  
atttagaacatctcaacaggggccaaaatgctcatttctaactgccatacttcacacag  
aaatataggcataacctcagagctattgcagggtcagttctcgaccaccataataaagtga  
atcacataaacaagagagcctgtccgttgaagccaggcattgacatctctctagctat  
gaaagtcctagatggcacccttctccaatggaagagtgttcatctgcattgaaaatctg  
ttgttagtatagccaccttcacagggatcttagctaggtcttctggatcacttactgt  
agcttctacctgcattcttgggattaaaaactttatc gatcatgatgtcttatctgtc  
tgatgtattgatggattcaacttactaatgttttcttgcagattttaaaatctatgtac  
atgaggtatattgctctttaaattttctttctatattgtcttctctggtttgttacc  
agggcaatgctcacctcatgagttgggaactattccattc

>IGR3389a

gggattaaaaactttattcgatcatgatgtcttatctgtctgatgtattgatggattcaa  
cttactaatgttttcttgcagattttaaaatctatgtacatgaggtatattgctcttta  
attttcttttctatattgtcttctctggtttgttatcagggaatgctcacctcatg  
agttgggaactattccattctcttctagtttcagaatagttatataagaattgctagta  
tttcttacttacttggtagaattcactaaatggaccatttgtgctggaattttcttgt  
tggaatatactttaataagcatgggatcgttcattattttcttctgaatgagcttttg  
gtagttgtgtcttcaagggaatgtgtttgttcatccaagtggttaaatatattaatgt  
cagagaaatctgtgatagtccttcttgcattcctgatataagcaatttgttctctttt  
ttcaatatcagtttgactagaagcttctttaaattgatctttcaaggagttaacttta

aaaaaattttcaataggttttggggaacaggtggtgttggttaaatgagtaagtctt  
tagtgggtgattttgagatttgggtgcacttgcaccaagcagtgactgtatccaa  
tgtgtagccttttattctcatcccttctcacttaccccc

>IGR3390a

gaagcttctttaattgatcttttcaaggagttaacttttaaaaaattttcaataggtt  
ttggggaacaggtggtgttggttaaatgagtaagtctttagtgggtgattttgagatt  
ttggtgcacttgcaccaagcagtgactgtatccaatgtgtagccttttattctc  
atcccttctcacttacccccgaatcccaaagtcattgtattatcattcttttgc  
tgcaccttatagcttagctcctacttatgagttagaacatacgaatttggtttctat  
tctgatttacttcaatagaataatggtctccaattccatccaggtgctgagaatgcc  
attattgtgttcatttttatgcctgagtagtattccatcatatgatttatttcatatg  
tcttgtgctactataaatatgcatgtgcaagtatcttttgtataatgacttctttcc  
tctgggtggatacccaagagtggttcttgatcaaatggtagatctacgttttagttct  
ttaaggaatctccacactgtttccatagtggttacttagttctttaaggaatctcca  
cattgtttctatagtggttacttagttacattcccaccaacagtgtaaaagtgtcc  
gttttactgcatccaccaacatctattattttgat

>IGR3391a

tgggatttctggatcaaatggtagatctacgttttagttctttaaggaatctccacactgt  
ttccatagtggttacttagttctttaaggaatctccacattgtttctatagtggt  
gtactagttacattcccaccaacagtgtaaaagtgtccgttttactgcatccacacc  
aacatctattattttgatattttgattatggccattctttcaggagtgggtgtatc  
atatggtggtttgatttgcatttcttgatcattagtgatgtgagcattttttaat  
atgtctgttggccatttctgtaccttctttgagaattgtctattcatgtccttagtcca  
ctttctgatgggattgtttgttcttgctaattgtttgagttcctttagattctggat  
attagctcttggatgttagattgtgaagatttctccactctgtgggtgtctg  
ttaactctgctgattttctttgcagtggagaagcttttagttaagtcacatctgt  
tatctttttttgtttgtttgctttgggtcttggcatgaagttttgcct  
ctagtcagtgtctagaaggttttcaatgttatcatcagaatcttatggtttcagg  
tcttggatttaagcctttagcatcttgttattttgt

>IGR3392a

tttgcagtggagaagcttttagttaagtcccatctgtttatctttttttgttgt  
ttgttgcctttgggtcttggcatgaagttttgccttctagtcagtgctagaagga  
tttttcaatgttatcatcagaatcttatggttcaggcttggatttaagccttga  
tccatcttgtgattttgtataaggtgagagatgaggatctggttcattcttctacat  
gtggcttgcagtatctcagcaccatttgtgaatagggtgtccttctccacctata  
ttttgttgccttgcgaagatcagttggctgtaagtattgtcttatttctggattc  
tgcaatctgtccattggtctatgtgccgtttttataactaaataccaagctgtttgg  
gattatggccttatagtatagttgaagtcagataatgtgatgcctccagattgttctt  
ttgcttagtcttgccttggctgtggaggctcttttggttcatatgaatttaggatt  
gttttcttagttctgtgaagaatgatgatggattttaatgggaattgcattgacttgg  
tagattgcttttgggtggtatggcatttccaatgttgattctacccatccatgagcat  
gggatctgtttccatttgttggccatctatgatttct

>IGR3393a

tgtggaggctcttttggttcatatgaatttaggattgttttctagtctgtgaa  
gaatgatgatggtatttaattgggaattgcattgactttgtagattgcttttgggtgat  
ggtcattttcacaatgttgattctacctatccatgagcatgggatctgtttccattgtt  
tgtgccatctatgattctttcagcagtgtttatagtttccctttagaggctttcac  
ctttcaaggagttaacctttggttcacagattttctctattgtgtctctttgcatatt  
tcattgatttctgcccttctacataaattttccttctacttgcgttfaatttg  
ttgtctttttctaggtcttagagtagcaggttaggttattgactggaactttcata  
aaaacatttaataatctacatttcttgaagcattgtttgactatattgtccaaaat  
ttgaaaaaaaaattcttatattgggataaatttagatttatgtaatagtttaataga  
atatagagttctctatatttcatttctctaatgtaataacttacataacat  
ggtacattttcaaaactgaaaaattaacattgatataattactattaccttaagatccag  
actttattcagatttaaccaacttttctactaatgtcctt

>IGR3394a

ttgggataaatttagatttatgtaatagttttaaatagaatatagagttctctatata  
tttcatcatttctctaatgtaataacttacataacatggtacattttcaaaactga  
aaaattaacattgatataattactattaccttaagatccagactttattcagatttaacca  
acttttctactaatgtccttttttgttctaggaaccaacccaaaataaccacagtgcac  
tagtcatcatgtctctttcatttattctttccttatttttaaagaccttgatggttatta  
agagtcatatgtttatagaagggccaccaacttagattttctgatgtttcttatgat  
tacaccaaggtatcaatttgagggaagaatgtaccttcatgtgcataatttagggg  
aacgtgactgatgaagtaactttgatcacttgccaagggtcatcacacaagtatgatat  
gttgccctacatgaaatgcaactcagaatgtttctaatttcttattgacttccact  
ttgactcatgagttatttagaagcatgttgcttatttcacaaatatttggggattttcca  
gatatttctgttattctaatttattctgttggtgcagataacatactttgtgtgctt  
cagttattttaaatgttgaggattgtttatgaccaag

>IGR3395a

caactcagaatgttttctaatttctttatgacttccactttgactcatgagttatttag  
aagcatgttgcttatttcacaaatatttggggattttccagatatttctgttattcta  
tttattctgttggtgcagataacatactttgtgtgcttccagttattttaattgttg  
aggattgtttatgaccaagaatatgatttagcttgatgaatgttcatgtgcacttgaa  
aagaatgtgtattctgctgtttagttgaatgctctttaaattgcaactaggtaaagt  
tggttgatagtggttcagggtcttctgtatccttatttatttttctctatttttcta  
tcatttattgaggactgttgaggtgtaactgtaattgtgggtttgtatgtttctattcag  
gtctatcattttgcttcatgtattttgaaactcttggttaggtaagtacataattagga  
ttgttatgtattcttggttaatttaccactttgtcctctataatgtccctgtttcata  
tatatgaaaacagggacaagaaatattttatatatatataaaatttatatatatata  
aaatatttctgttctgaagtcctctttttgatactaataatagctgttctagctttctt  
ttgatttatgtttcaacaatatatcattttccatcattt

>IGR3396a

atttaccactttgtcatcctataatgtccctgtttcatatatatgaaaacagggacaag  
aaatattttatatatatataaaatttatatatatatataaaatatttctgttctgaag

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

tctcctttttgatactaataatagctgttctagctttctttgatttatgtttcaacaat  
atatcattttccatcattttattttattaaatgcacttcatttttaaagaagtt  
ttaggtttacaaaaacttagcataaagtacagtgccttataatccccacccccatat  
agtttctctattattaacttcttgctttcacgtgggtgttcattacaagtgatgcaca  
aatatggatacattattattattattttgaggcagagtctctccctctgtcaccag  
gctggagtgagtgccatgatctcgcctcactgaaacctccgcctcctgagttc  
aagctattcttctgcctcagcctcccagtagctggatctacaggcatgcaccaccatgc  
ccggctaatttttcattttagtagagacggggttcaccatgttgccaggctggtct  
caaagtgcggggattacaggcatgagccacagcaccagcctgatacattattattaact  
aaagtcacaattcacattagagttctctctttgtgtgt

## &gt;IGR3397a

cctcccagtagctggatctacaggcatgcaccaccatccccggctaatttttcat  
tagtagagacggggttcaccatgttgccaggctggtctcaaagtgcggggattacagg  
catgagccacagcaccagcctgatacattattattaactaaagtcacaattcacatta  
gagttctctctttgtgtgtacagttctgtagatttgacaattgtatgacatgtgtcca  
ccgttacagttttatcacagcataatttcattgccaaaaaatgtctgtgtccacttat  
tcatcattccctctgcccgaacctcttggaacctggtcttttaccatctgtatag  
ttttgcctttccagaatgtgatgtaattgagtcatacattattagccttctcagatt  
ggtttcttctacttagcaacatgcatttaagggttccccctgtcttttggccttgata  
gtcatttccctatattgccaaataatattttattgtatggctgtatcagttgtttatc  
cattcatctattggaggatgtcttgggtgtatccaggtttggcaattatgaataaagct  
actgtgaacatttgtatgcagggtgttggtgtacttggatttcaactgatttgggtaa  
ataccaagcagcatgatcgctggattgtatagtaagacta

## &gt;IGR3398a

aaataatattttattgtatggctgtatcagttgtttatccattcatctattggaggatg  
tcttgggtgtatccaggttttggcaattatgaataaagctactgtgaacatttgtatgca  
gggtgttgggtgtacttggatttcaactgatttgggtaataccaagcagcatgatcgc  
tggattgtatagtaagactatgttagctttgtaagaaactgctgaactctcttccaaa  
tggctatagcattttgcatcctaccaacagtgtataagagtttctatagctatatacc  
tcaccaatatttgggtgtgcctgtgtttggatttcatcattctgacagatgcatagtg  
atatctcattgggtgttttaatttgcaattccctaatacacatataatatttagcgttttt  
tcccccgagatggagtctggctctgttggccaggctggagtgcagtgggtgcggtctcag  
cccattgcaacctctgcctctcagttcaagcaattctcctgcctcagcctcccaagcag  
ctgggattacaggcgcctgccaccatgcattggttaattttgtatttttagtagagaagg  
ggtttaccatgttgaccagactggctccaactcctgacctcgtgatctgcctgcctca  
gcctcccaactgctgggattacagggtgtgagccaccag

## &gt;IGR3399a

tcgagttcaagcaattctcctgcctcagcctcccaagcagctgggattacaggcgcctgc  
caccatgcattggttaattttgtatttttagtagagaaggggttcaccatgttgaccag  
actggtctccaactcctgacctcgtgatctgcctgcctcagcctcccaactgctgggat  
tacaggtgtgagccaccacgcctggccaatatttagcatctttcatatacttactgcc  
atttgtatacatctttgatgaggtgtgtttgttagataattttgccatttttaaagt



agagctcgacctatctggggcaagggaataactccagccccctctggctatcctttccc  
atftaaaggggggataaaaagctgaaaacgactggtgaagttcattgtctagcaacacag  
gtcaccagaagactgagatctaatacataggactatggaacacttcctgcctccatat  
cttaccactacattactaaaagcctatgtagccaggcgcg

>IGR3403a

caagggaataactccagccccctctggctatcctttccatttaaaggggggataaaaa  
gctgaaaacgactggtgaagttcattgtctagcaacacaggctcaccagaagactgagat  
ctaatacataggactatggaacacttcctgcctccatatcttaccactacattactaaa  
agcctatgtagccaggcgcggtctcacgcctataatcccagcactttgggaggccaag  
gcgggagaatcacttgaggccaggagtcaagaccatcctggccaatatggtgaacccc  
atcttactaaaattacaaaaatagctgggcttggtggcacacacctgtaatcccagct  
acgtgggaggctgaggcaggagaaccactgaacccgggaggcagaggttgcaagtgaact  
gagatcacgccactgcactccagcctgggcaacaaagtgcgactctgtctcaaaaacaaa  
caaataaacacacaacctaaaagtcttttaccacaattcctttaccccgtagaccttt  
cagcagtatactacaaggcatattaaaaggcaaaaacacaattggaagagacagagcaa  
ccatcagaatcagacctatgtggcaaggatgtgagaattatcagactgggaattttaa  
acaactatgattaatatgccaagggcactaatagaaaaag

>IGR3404a

aagtcttttaccacaattccttttaccctgtacacctttcagcagtatactacaaggca  
tattaaaaggcaaaaaacacaattggaagagacagagcaaccatcagaatcagaccata  
tgtggcaaggatgtgagaattatcagactgggaattttaaacaactatgattaatatgcc  
aagggcactaatagaaaaagtagtaaatgaagaacagatgagtaattgaagcagaga  
aatgcaaacctctaagaaagatttaaatcaaatgaagatgctggaaataaaaacatagtaa  
ctgaaattaagaatacctttggttaagctcatcagtatactggacacagatgaggaaaga  
aacagtgagacttaagatatgtcaatagaaattcccaaatgaaaggcaaaagggaat  
aaaactttaaaaaacagaatatccaagaactgtaagacaaccacaaaaatgtaagtacat  
ataatgatagtattggagaagaaactgagaaggaacagaagcaatatttgaagcagtaa  
ggaaataatttctcaaatatgtcagacatcaaacacagatctaagaatcagagaa  
caccaaataggataaaattttaaaggccccaaaaatgaaaactatacctaggcatatc  
atattaaaactgcagaattttcagataaagaaaaaaat

>IGR3405a

gaaactgagaaaggaaacagaagcaatatttgaagcagtaaggaaataatttctcctcaat  
taatgtcagacatcaaaccacagatctaagaatcagagaacaccaaataaggataaaattt  
taaaaaagccccaaaaatgaaaaactatacctaggcatatcatattaaaactgcagaaatt  
ttcagataaagaaaaaaatcttgaaagaaagccgggggtggaggggggaatcttatcta  
taaaggagcaagataagaaatatttctcctcctgagaaatcatgcaagcaagaaaaaat  
tgagtgaaaaatcaaagcattgagagaaaaaaacccccaccaacctacaattctg  
tccttgcaaaattatccttcaaaagtgaagatgagataaagactttctcagataaacaaa  
aactgaatgaaattgttgcagtagatcttcttgaagaatgtttaaagaagtgtt  
caggagagaaggaaaaatgatataaggcagaatctcagatctatataaagaagcatcagag  
aaggagtaagtaataataaaataaacacattttcttattcttaattgatgtaactgata  
acagtttgtaacaataattaacaatgcattcaatttgtgtgtatataaatatatac

atttatgtgtgcttatgaataagtgaatgaatgacagca

>IGR3406a

taggtcagaatctcagatctatataaagaaagcatcagagaaggagtaagtaaataaaa  
ataaacacatttttcttattcttaattgatgtaactgataacagtttgtttaacaatatt  
aacaatgcattcaattttgtgtgtgtatataaatatafacatttatgtgtgcttatgaat  
aagtgaatgaatgacagcagtgatgcaagggtgggaggagagaattagaaatacttggt  
tattaggtacttgcactgtatgggaagtggtagtattattgaaaatggattgggggt  
agttataaatgcataatttcaaactctagggaaccactttaaaaagtaagaaaagaagt  
ataattggtatgctaagaaaagagagaaaatggaatcatataaatgctcaattaaaacc  
acggaaggcagaaaaagagtggagacagaaataggaacaaagaacaaaggcaacaata  
gaaaatagtaacagatatggcagatcaaactatafcagtaaacacttcacagtcactctg  
gaaggcagtttggtgtctcttaccaaactaaacatgctcttagcacatgatccagccct  
tgcactccttagaatttaccaaaataagttaaaaacttatgtcacccagaacagctgca  
tacagctgtttatagcagctttctcatagttgcgaaaac

>IGR3407a

cagatcaaactatatacagtaaacacttcacagtcactctggaaggcagtttggtgtctc  
ttaccaaactaaacatgctcttagcacatgatccagcccttgcactccttagaatttacc  
caaataagttaaaaacttatgttaccaccagaacagctgcatacagctgtttatagcagct  
ttcttcatagttgcgaaaacctggaagcaaccaagatgtcttgccttcagggttggaagg  
atggatgggtaaataaaactgatacatccaggcaatgaaatattgttcagtgtctaaaagga  
aatgcactatcaagctataaaaaagacatggaggaaccttaaatgcataattgctaagtga  
agaagctcatctgagaaggccagcttcaagtattctcatgcctcaacctctcaagtagc  
tgggattacaggcacgtgccaccatgcctggctaatttttcattttagtagagacaag  
gtttcccatgttggccatgctggtcttgaactcttgacctcaagtgtacggccacctt  
ggcctcccaaagtggtaggattacaggcatgagccaccatgcccacccattatacgtt  
tgtcaaaaccacagaatgtacgccaccaagagtgaaccctaataataaactgtggacctg  
gggtgataattatgtgacaatgtaggttcattgatctaac

>IGR3408a

ctggtctgaactcttgacctcaagtgtacggccaccttggcctcccaaagtggtagga  
ttacaggcatgagccaccatgccacccccattatacgtttgtcaaaaccacagaatgt  
acgccaccaagagtgaaccctaataaaactgtggacctgggggtgataattatgtgacaa  
tgtagggtcattgatctaacacatgtaccactgtacgcagtacatcaatagtggggatg  
tttatgcatgttaggggcatggatagatgaggagtctgtacttctgcttaattttgct  
gtgaacctaaaactgctgttttttaaagatttttccccctcagtttaaagattattt  
cacttgggtgtagaattctgggttgatagcaattttttcttttattctttaagatct  
cacaccattgtcttctggattatataatttctgaatatgtctgctgtaattcttatctg  
tttatctgtgtgaatgtttcttttatcttgcattgtaagattttctatttgtttt  
ggtttcagcagtttaaataaacgtatctttctaagcgtgatttcttttagtggtggtg  
gtggggtatttatctgattgtgacctctgagttattttttaaaaaatacatatataat  
atttaatatataattaaatgtatatttttatataattat

>IGR3409a

ggttgcctccaaagtggtaggattacaggcatgagccaccatgccacccccattatacgtttgtcaaaaccacagaatgt  
acgccaccaagagtgaaccctaataaaactgtggacctgggggtgataattatgtgacaa  
tgtagggtcattgatctaacacatgtaccactgtacgcagtacatcaatagtggggatg  
tttatgcatgttaggggcatggatagatgaggagtctgtacttctgcttaattttgct  
gtgaacctaaaactgctgttttttaaagatttttccccctcagtttaaagattattt  
cacttgggtgtagaattctgggttgatagcaattttttcttttattctttaagatct  
cacaccattgtcttctggattatataatttctgaatatgtctgctgtaattcttatctg  
tttatctgtgtgaatgtttcttttatcttgcattgtaagattttctatttgtttt  
ggtttcagcagtttaaataaacgtatctttctaagcgtgatttcttttagtggtggtg  
gtggggtatttatctgattgtgacctctgagttattttttaaaaaatacatatataat  
atttaatatataattaaatgtatatttttatataattat

ctttttatcttgtcatgtttaagattttctattttgttttgggtttcagcagtttaata  
taacgtatctttctaagcgtgatttcttttagtggtggtggtggggattttatcctgatt  
gtgacctctgagttattttttaaaaatacatatataatttaatatattttaatg  
tatattttttatataattttatttttagagacagggctctgtgtgtgtccagactgg  
tgttgaactcctggtttcaagcgatcctcccacctgggattacaggeatgagccactatg  
cccaatcatctctctgagcttcttgatctgtagtgtgtatctttcattttttctgaag  
attcttggctaatttctctttaaatatttcttctttaaaaaatatctacttcaaatacct  
aatatagatgacgggttgatgggtgcagcaaacatcatggcatgtgtatacctatgtaa  
caaacctgcacgttctgcacatgtatcccagaacttaagataataaaaaaaaaattttta  
aaaagaaaaaattaaaatctacttcttctctcttggaaattttaaggcttaggagaagagttg  
tgtacatgtccagaagaaaagtggagttgagtcagtttattaggatgtgggtgtgggttg  
ggattttttgtttttgtttttgtggttgcctttcagtgta

## &gt;IGR3410a

atgtatcccagaacctaaagtataataaaaaaaatttttaaaaagaaaaattaaaatcta  
cttccttctcttggaattttaaggcttaggagaagagttgtgtacatgtccagaagaaaa  
gtggagttgagtcagittattaggatgtgggtggtgggttgggatttttgttttgttt  
ttgtggttgctttcagtgfacctccaacttcaaaagcattgtgcttagagtagaggctggg  
ttccagagggtttttgtttgttttctaaaatgttctgcttacttgcagctttcag  
aattcccagtgggacctgtaccttgaggggatgtttcttgatgcatgcttgccccgtgtcc  
agcagtggtctcctgttcttctgttactcatgcttgctagtccagtgatggggaccagtgga  
ggactcttactgtcctgggtccagcctcactattagacaggctaaaagtctgtcagcct  
gtgggaagggcaggaaatgggtctggcccaagttcattagagggtttttgtattggttgt  
ttgtttgtttgtttgtttgtttgagacagagtccttgttctgtcaccaggctggagtgca  
agtgggtgcgatctcagctcactgcaacttctgcctcctgggttcaagcaattctcctgcc  
tcagctcctgagtagaggggattacaggcatgtgccacta

>IGR3411a

tctggcccaagttcattagagggttttgttattggttgtttgtttgtttgtttgt  
tttgagacagagtcctgttctgtcaccaggctggagtgcagtggtgcgatctcagctca  
ctgcaacttctgcctcctgggttcaagcaattctcctgcctcagctcctgagtagagggg  
attacaggcatgtgccactatgcccaactaattttgtatttttagtagagaaggggttt  
tgccatgttggccaggcttgtctcaaactcctgacctcaagtgatccaccacttcagcc  
tcccaaaagtgttgagattacagggtgtgagctatcgcacctggccatgaggtgttctacca  
ctgttggaagggtagaatgttctttccagggtcaagatccatcaaagaaacaaggaaaagt  
ttggctgtctcagagaggggatcaggatcaccaggaaatctccagacatggagaaccagt  
ctttcttgtgagcatccagtaaaggctctgtggagaaaaatgtatgagagaggtgtgaatt  
tttcttgtgtctgtgactcccaggaatttcataatcacacattagcccacaatttgcctt  
tagtaatttttttttaaagctccagtcctgcagctcccagtgagaccaacgcagaagg  
tgggtgatttccagctgaggtgcccggttcatctcattgg

>IGR3412a

aaaggtctgtggagaaaatgtatgagagaggtgtgaattttcttgtgtctgtgactcc  
caggaatttcataatcacacattagcccaaatggccttagtaatttttttttaaa  
agctccagctgcagctccagtgagaccaacgcagaaggtgggtgattccagctgagg



tgcccggttcatctcattgggactagttaggcagtggtgccacccacagagcaagca  
gaagcaggggtggggcatcgcttcacctgggaagtgaaggagccaggggacctccctcc  
acagccaagggaagtggtagggactgtgctacctccctggatactacacttttccgt  
ggattttgcaatctgcagatcaggagattccctcgtgaacttacaccaccagagccctg  
ggtttcaagcacaaaactgagcagctgattgggcaggcactgagctagctacaggagttt  
ttttgtactccagcggcacctggaaccataatgagacaggagacaggagagacaggagaa  
ccgtccactcccctagaaaggggctgaagccaggagccaagtggcttctgctcagcagg  
tcccactcccacagatcccagcaagctaagaaccactggcttgaattctcactgccagc  
acagcagctctggagttgaccagaatgatcgagcttggtg

## &gt;IGR3413a

tggaaccataatgagacaggagacaggagagacaggagaaccgtccactcccctagaaag  
ggggctgaagccaggagccaagtggcttctgctcagcaggtccactcccacagatccca  
gcaagctaagaaccactggcttgaattctcactgccagcacagcagctctggagttgacc  
cagaatgatcgagcttggtggcgggaggggcatccaccagtactgaggcattagtaggcg  
gtttccctgacagtgtgaaggagactgggaggtttggaatgggcagaattaccacag  
catggcaaagtgactgtggccagattgcttcttagattcctcctcactgggcagggcat  
ctctgaaggaaaatcagcagctccagtcaggggcttacagataaaactctcatcttctg  
gtacagagcatctggagggaaggcagctgcagtcacaacttcagcagacttatacttt  
cctgccctctggctctgaagaaagcaactgacctgacaagggggtatttccagcacag  
tgtactagctctgctaaggaacagactgccttctcaagtgggtccctgacctctgtgct  
ctgactgggagagacctcccacaggatcaacagacacctcatacaggagagctctggc  
tggcatcaggccagtgccccctgggatgaagcttccagag

## &gt;IGR3414a

aaagcaactgacctgacaagggggattattccagcacagtgtactagctctgctaagga  
acagactgccttctcaagtgggtccctgacctctgtgctctgactgggagagacctccc  
aacaggatcaacagacacctatacaggagagctctggctggcatcaggccagtgcccc  
ctgggatgaagcttccagaggaaggagcaggcagcaatcttctgctgttctgcagcctcca  
ctggtgataccaggtgaacagggtctggagttgacctccagcaaaactacagcagacctg  
cagaagaggggctgactgttagaaggaactaacaacagaaagcagaacaacaaca  
acataaaaaagatccccacacaagaacccatcaaaggctcattagcctcaaagatcaaa  
ggtagataaatccatgaagatgaggaaaaaccagtacagaaatgctgaaaattccaaaag  
ccagaatgccttcttctcctcaactgattgcagcacctctccagcaagggtgtaaaactg  
gacagagaatgagattgatgaattgacagaagtaggcttcagaagatgggtaatacaaaa  
ttcctctgagctaaaggagcacgttctacccaatgcaaggaagctaagaacctataaaa  
aggttacagggaactactaactagaataaccagttcagaga

## &gt;IGR3415a

caactgattgcagcacctctccagcaagggtgtaaaactggacagagaatgagattgatg  
aattgacagaagtaggctcagaagatgggtaataacaaattcctctgagctaaaggagc  
acgttctcacccaatgcaaggaagctaagaacctataaaaagggttacaggaactactaac  
tagaataaccagttcagagaggaatataaatgacctgatgtagctgaaaaaacagcatga  
taatttagtgaagcataaacaagtatttagtccaaatcacgtggaagaaaggatgtcag  
aaattgaagaccaccttctgaaataaagcatgaagacaagattagagaaaaaggatga

aaaggaatgaacaaagcctccacaaaatatgtgactatgtgaaaggaccaaactacaat  
taatgggtgtacctgaaagtgtgaggagattggaaccaagttggaacacacttcagg  
atattatccagaacttccccaacctagcaagataggccaatattcaattcaggaaatac  
agagaacaccacaaaaatactccttgagaagatcagccccagacacataatcttcagat  
tcaccaagggtgaaatgaaggaaaaatgttaagggcagccagaaagaaaggtcgggtca  
cgtacaaaggaagcccatcagactaacagcagatctctc

>IGR3416a

aacctagcaagataggccaatattcaattcaggaaatacagagaacaccacaaaaatac  
tccttgagaagatcagccccagacacataatcttcagattaccaagggtgaaatgaag  
gaaaaaatgttaagggcagccagaaagaaaggtcgggtcacgtacaaaggaagcccatc  
agactaacagcagatctctctgcaaaaaccctacaagccagaagagcatgggagccaata  
ttcaacattcttaagaaaaagaattttcaaccagaattttatatccagccaaactaagt  
ttcataagcaaaagagaaataaagtccttgagagacaagcaataactgaggattttgtca  
ccaccaggcctgccttgcaagagcacctgaaggaaacactaactatggaaaggaaaaact  
ggtaccagccattgcaaaaacacatcaaaatataaagaccatcaacactatgaagaaact  
gcatcaactaatgtgcaaaatagccagctagcatcatgatgacaggatcagattcacaca  
caataatattaaccttaaatgtaaatgggctaagtccccagttaaaagacacagactgg  
caaattggataaagagtaaagaccatccatgtgctgtattcagtagaccatctcatgt  
gcaaagacacacataggctcaaaataaagggatggagggga

>IGR3417a

tagccagctagcatcatgatgacaggatcagattcacacacaataatattaaccttaaat  
gtaaatgggctaagtccccagttaaaagacacagactggcaattggataaagagtaaa  
gaccatccatgtgctgtattcagtagaccatctcatgtgcaaagacacacataggctc  
aaaataaagggatggaggatatttaccagcaaatggaaagcaaaaaaagtaggagttg  
cagtcctagtctccgataacacatactttaaccaacaaagatcataaaagacaaaagg  
ggcattacataatggtaaaggatcaatgcaacaagaagagctaactctcctaattgtac  
atgcaccaatacaggagcaccagattcataaaacaagttcttagagatgtacaagag  
acttagactcccacacaataaaaaaggagactttaacacccactttcaatattagatg  
gatcaacgagacagaaaaataacaaggatattcaggatgtgaactcagctctggatcaag  
gggacctaatagacatctacagaactctccaccccaatcaacagaatatttattctct  
cagcaccacatggcacttattctaaaattgaccacatgattgggagtaaaacactctca  
gcaaatgcagaagaatggaaataataacagtctgtcagac

>IGR3418a

aacaaggatattcaggatgtgaactcagctctggatcaaggggacctaatagacatctac  
agaactctccaccccaaatcaacagaatatttattctctcagcaccacatggcacttat  
tctaaaattgaccacatgattgggagtaaaacactcctcagcaaatgcagaagaatggaa  
ataataacagtctgtcagaccacagtgtgattagcattaagaagtcactcaaaacctca  
caactacatggaaattgaacaatgtgctcctgaatgactactgggtaataacaaaatta  
aggcagaaatcaagaagtctttgaaaccaatgagaacaaagactcaacatgccagaatc  
tctgggacatagctaaagtgtgtaagagagaaatttatagcactaaaggcccatca  
gaaagctggaaagatctcaattgacaccctaactcacaattaaaaggattagaagca  
ggagcaacaaattcaaaaactagcagaagacaagaataactaagattagatcagaact

gaaggagatagaggcacaaaaacccttcaaaaatcagtgaatccaggaggtggttttt  
gaaaaaaaaaaaaaattaacaaaatagatagactcctagctagactagtaagaagaaa  
agagaagaatcaatagacacaataaaaatgataaagaga

>IGR3419a

ctagcagaagacaagaaataactaagattagatcagaactgaaggagatagaggcacaaa  
aaacccttcaaaaatcagtgaatccaggaggtggtttttgaaaaaaaaaaaaaattaa  
caaaatagatagactcctagctagactagtaagaagaaaagagaagaatcaaatagaca  
caataaaaatgataaagagaatatcagcactgatccacagaaatgcacactaccatcag  
agaatactataaacacatctacacaagtaaaactagaaaatctagaaaaatggataaatt  
cctggacacatacatcctcccaagactaaaccaggaagaagtcgagtcctgaatagacc  
aataacaagttctgaaatcgaggcaataattaatagcctaccaacaaaaaatcccagg  
accagacagatttcacaaccaatttctaccagaggtacaaaggagctggtaccattcc  
ttctgaaactattctaaataattgaaaaagggcactcctcctgaactcattttatgagg  
ccagcatcctcctaataccaaaaccttgagagacataacaaaaacagaaaacttcaggc  
caatatccctgatgaacattgatgagaaaatcctcaataaaatactggcaaaccaaatct  
agcagcacatcaaaaaagttatccaccacaatcaagtcag

>IGR3420a

attgaaaaagggcactcctcctgaactcattttatgaggccagcatcctcctaatacca  
aaaccctgcagagacataacaaaaacagaaaacttcaggccaatatccctgatgaacatt  
gatgagaaaatcctcaataaaatactggcaaaccaaatctagcagcacatcaaaaaagtt  
atccaccacaatcaagtcagcttcatcctgggatgcatggctggttcaacatatgcaaa  
tcaataagcgtaatccatcacataaacagaaccaatgacaaaaactgcatgattttctca  
atggatgcagaaaacgccttcaataaaatcaacatcccttcagctaaaaactctcaat  
aaactaggtattcatggaacatatctcaaaataataagagctatttatgacaaaccaca  
gccaatatcactgaatgggcaaaaagctggaagcattctcttgaaaaaccagcacgag  
acaaggatgcctctcttaccactcctattcaacatagattggaaagtctggccagggc  
aatcaggcaaaagaaagaaataaagggttcaaataggaagagaggaaagtcaaatgtctc  
tgtttacagatgacatgattctatatttagaaaaccctattgtcttgcccaaatctctc  
taagctgataagcaaattagcaaagtctcagggtacaaa

>IGR3421a

cactcctattcaacatagatttggaagttctggccagggaatcaggcaaaagaaagaaa  
taaagggttcaaataggaagagaggaagtcaaattgtctctgtttacagatgacatgatt  
ctatattagaaaaccctattgtcttgcccaaatctcttaagctgataagcaaattha  
gcaaagtctcagggtacaaaaccaatgtgcaaaaattacaagcattcctatacaccaaca  
atagacaagcagagagccgaatcatgaatgaactctcttcacaattgctacaaagatag  
taaaatacctaggaatacaactacaagggatgtgaaggacctctcaaggagaacaaca  
aacaactgctcaaaagaaataagagaggacacaaacaatggaaaaacattccatgctcat  
ggatagaaagaatcaatattgtgaaaattgccatactgccaaaagtaatttatagattca  
atgctgttcccatcaagctaccattgactttcttgagaattaaaaaactactttgaa  
tttcatatggaacctaaaaagaacctgtatagccaagacctaaagcaaaaacaacaaagct  
ggaggcatcacgctccctgacatcaactatactacaaggctacagtaagcaaacagca  
tggtactgctacaaaacagatatatagaccaatggacca

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

>IGR3422a

ccattgactttcttgcagaattaaaaaactactttgaatttcatatggaacctaaaaa  
gaacctgtatagccaagacctaaagcaaaaaacaacaaagctggaggcatcacgctccctga  
catcaaactatactacaaggctacagtaagcaaacagcatggtactgctacaaaacag  
atatatagaccaatggaccagaacagagacctcagaagtaacaccacacatctacaacca  
tctgatctttgacaaacctgacaaaagcaatggggaaaggattccctatttaataaatga  
tgctgggaaaactggctaaccatgcagaaaactgaaacttccttataccttatacaaa  
aattaactcaagatggattaaagacttaaatggaaaacccaaaaccataaaaaccctaga  
agaaaaacctaggcaataaccattcagaacataggcatggacaagacttcatgattaaaa  
caccaaaaagcaatggcaacaaaagccaaaatagacaaatgggatctaattaaactaaaga  
gcttctgcacagcaaaaagaaactatcatcagagtgaacaggcaaccgacagaatgggaga  
aaattttgcagctacccatctgacaaaggtctagtatccagtatctacaaggaactta  
aacaatttacaagaaaaatcaaatgaccccgtaaaaaag

>IGR3423a

aaagccaaaatagacaaatgggatctaattaaactaaagagcttctgcacagcaaaagaa  
actatcatcagagtgaacaggcaaccgacagaatgggagaaaattttgcagctaccca  
tctgacaaaggctctagtatccagtatctacaaggaacttaacaaatttacaagaaaaat  
caaatgaccccgtaaaaaagtgaggcaagtgtatgaacagaaaattctcaaaaaagacat  
ttatgtggccaacaaacatatggaaaaaggctcatcatcccaccattagagaaatgcaa  
tcaaaaccacagtgcagataccatctcatgtaagtcagaatggtgattattaaaagtcagg  
aaacagtagatggtgacgaggctgtggagaaataggaatgcttttacagtgttggtggga  
gtgtaaattagttcaaccattgtggaagacaatgtggcgatacctcaaggttctagaatc  
agaactaccatttgaccgcaatcccattactgggtatatacctaaaggattagaaatc  
attctataaaagacacatgtgcagtgtatttattgcagcactatttacaatagcaaagac  
ttggaaccaacccaaatgtccatcaatgctagactggatataccatggaatactacgc  
aaccataaaaaagaatgagatcgctcctttgcaggtaca

>IGR3424a

caatcccattactgggtatatacctaaaggattagaatcattctataaagacacatgtg  
catgtatgtttattgcagcactatttacaatagcaaaagacttgaaccaacccaaatgtc  
calcaatgctagactggatataccatggaatactacgcaaccataaaaaagaatgaga  
tcgtctcctttgcaggtacatggatgaagctggaagccatcattctcagcaaaactaacac  
aggaacagaaaaccaaactgcattgtctcactcataagtgggagttgaacaatgagaa  
cacatggacacaggaaggagaacaacacacgtcaaggtctgttagggggtggggggcaag  
gagaggagagcattaggacagatacctaacgtaagcagggttaaacctagatgacgg  
gttgataggtgcagcaaacatgatggcacgtgtatacttatgaacaaacctgcacatt  
ctgcacatgcatcccagatatcaaagtaagattaaaaataaataaaaatgaaaaagaca  
aaaaaaacccacagaaattttttacctgcttctatgttgcccagtggttcttctctt  
tgtgttctgccacagatgacccagtgctcatgtctcatttctcttgggtgcatctatct  
ttcttacatttagactttttttttttttttttgag

>IGR3425a

tcaaagtaagattaaaaataaataaaaatgaaaaagacaaaaaaacccacagaaatt  
attttacctgcttctatgttgcccagtggttcttcttctgtgtctgccacagatgac

ccagtgtcatgtctcatttctcttgggtggcatctatctttcttacattttagacttt  
tttttttttttttgagatggagtcactccgttgcctaggtggaatgcagtggc  
aagatctcagtcactgcaacctccacctccaggtgcaagtattctctgttcagcc  
tcctgagtagctgggattacatgcacatgccacatgcctggctgatttttggatttt  
tagtagagatggggttcaccatgttggccaggctagtctgaactcctgacctcaggtg  
atccaccgccctcagctcccaagtgtggaatgacaggcataagacacatgcccggc  
ccattttagacttttgattgccctatgatctcagttctctaatagttttaggaaaagt  
atgatttttagtttatctggctattgtgtctgttaggatgtaatactcatccagcttt  
ccacatcctgcaatttcttgtgtttaagaattttttaattatactttaagtctg  
gggtatctgtgcagaatgtgcagtttgttacataggtat

>IGR3426a

gccctatgatctcagttctctaatagttttaggaaaagtattgattttgagttatctg  
gctattgttctgttaggatgtaatactcatccagcttccacatcctgcaatttctt  
gtgttttaagaattttttaattatactttaagttctggggatctgtgcagaatgtg  
cagtttgttacataggtatacacgtgccatggtggttactgcacctgaacctgtca  
tctacattagttattccctaatactatccctccctagcccccaacttcccacaggc  
cctgaggtgtgatattcccctcctgtgtccatgtgttctcattgttcaactcccacta  
tgagtgagaacatgcagtggttggtttctgttctgtgtaatttctgagaaatgatg  
gttccagcttcatccatgtccttgcaaaggactcatggttttatggctgcatagtat  
tccatgggtgtatgtgccacatttcttataccagtatactgatgggcatttgggt  
tggttccaaagcttctgtgtgtgtacagtgccgaaataaacatactgtgcagtgct  
ttcatagtacaatgattataatcttgggtataataccagtaattgggattgctgggtc  
aaatagtagttctgggtctagatccttgaggaatcaccac

>IGR3427a

catttctttatccagtatactgatgggcatttgggttgggtccaagcttctgtgt  
tgtgtacagtcccgaaataaacatactgtgtcatgtgtcttcatagtacaatgattat  
aatcttttgggtatataccagtaattgggattgctgggtcaaatagtagttctgggtcta  
gatccttgaggaatcaccacattgtcttccacaatggctaaactaatttactcccacc  
aacactgtaaaagtgttactatttctccacatccttccagcatctgttgttccagact  
tttaatgattgccattctaactggcgtgagatgggtatctcattgtgatttcgatttgc  
atttctctaataccagtgatgatgagctttttctgtatgttgttggctgcataaatg  
tcttctttgagaagtgtctgttcatacttggccacttttgatgggggttggtttt  
ttcttgtaatttgtttaagttcctttagattctggatattagcccttgtcagatgga  
tagattgcaaacatttctccattctgcaggttgcctgttactctgacgatagtttt  
tttctgtgcagaagctctttagtttaattagatccattgtcaattttggcttttgt  
gccattacttttgggtgtttaatcatgaagtcttgtcca

>IGR3428a

ttcctttagattctggatattagcccttgtcagatggatagattgcaaacatttctc  
ccattctgcaggttgcctgttactctgacgatagttttttctgtgcagaagctctt  
tagtttaattagatccatttgcattttggcctttgttgcattacttttgggtgttt  
aatcatgaagctcttgtccatgcctatgtcctgaatggattgcctaggttttcttgg  
ggttttatgatttgcgtttccatttaagctttaatccatcttgagtttaattttgt

gtaaggtgaaggaaggggctcagtttcagttttctgcatatagctagccaattttccca  
acaccatttattaaatagggaatcgtttccccatttctgttttgcaggtttgtcaaa  
gatcagatgggtgtacatatgtgggttattttgaggtctctgttctgttccattgggc  
tatgtatctgtttgttaccactaccatgttttggttactatagcctttagtatagttt  
gaagtcaggtagcatgatgcccccaactttgtacttttacttaggattgtcttggctat  
gcagtccttttttaggttccacatgaaagctaaagtagttttaccaaatctgtgaagaa  
agtcaatggtaacttgatggggatagcactgaatctgtta

>IGR3429a

actaccatgttttggttactatagcctttagtatagttgaagtcaggtagcatgatgc  
ccccaactttgtacttttacttaggattgtcttggctatgcagtccttttttaggttcc  
acatgaaagctaaagtagttttaccaaatctgtgaagaaagcaatggtaacttgatgg  
ggatagcactgaatctgttaattactttgggcagtatgccatttcatgatattgattct  
tcctattcatgagcatagaatgtctttccattgtttgtctctctctattttcttgat  
cagtggtttgtatgttctgaagagatccttctcatcccttgaagttgtattcctaggta  
tttattctcttttagcaattttgactgggagttcacgcatgatttgggtctctgtttg  
tctgttattggtgtataagaatccttgtgattttgcacattgatttgcctgagac  
tttgcgaagttgcttcatcagcttaagaagattttgagctgagacaatgggattttctaa  
atatagaatcatgtcatctgtaaacagagacaatttgacttctcttttctgttgaat  
acctttatttcttcttcttcccagattgccctggccagaacttccaatattattatgtt  
gaataggagtgccgagagaggccatccttgtcttgtgctg

>IGR3430a

gcttaagaagattttgagctgagacaatgggattttctaaatatagaatcatgtcatctg  
taaacagagacaatttgacttctcttttctgtttgaataccctttatttcttctctt  
gcccagattgccctggccagaacttccaatattattatgttgaataggagtggcgagagag  
gccatccttgtcttgtgctgggtttcaaaggaaatgcttccagctttgccattcagta  
tgatattggctgtgggtttgtcataaatagctcttattttttagatatgttccatgaa  
tacctagtttattaagagtttttaacatgaagaggtgttgaattttgtcaaggccctttt  
ctgcactattgagataatcatgtggttttgcattgggtctgttattgtgatggatta  
cacttatggatttgtgtatgttgaaccagccttgcacccagaaatgaagccgagttgat  
tgtggtggataacctttctgatgtgctgctagatttgggttggcagattttattgaggg  
ttttgcattgatgttcatcagggatattagcctgaaattttctgaataccaaagcctgg  
cctgtctccaccaggttttggatcaggatgatgtcggcctataaaatgagttagggggg  
gattccctcttttcttcttgggaatagtttcagaagg

>IGR3431a

atgtgctgctagatttgggttgcagttattttaggggtttcgcattgatgttcatc  
agggatattagcctgaaattttctgaataccaaagcctggcctgtctccaccaggtttg  
gtatcaggatgatgctggcctataaaatgagttaggggggattccctcttttctctg  
tttgaatagtttcagaaggaatagtagcagctcctctttagacctctggtagaatttgt  
ctgtgaatctgtctggctctgggcttttttgggtgtaggctattaactgcctcaa  
tttcagagcctgttattggctctattcagggaatttgacttcttctgggttagcttgggt  
gggtgtatgtgtccaggaatttatccatttcttcaattttctgggtatttagatttc  
tagtttatttattttctgtgggatcagtggggatccctctttaccatgttttagcgtg

tctatttgattctctccttctcttatttagtctgactagcggctatctatttta  
ttgatcttttcaaaaaaccacctcctggattcatggatttttgaagggttttcatgtc  
tctatctcctccaatctgctctgatcttagttattcttgccttctgctagctttttaa  
ttgtttactcttgcctctctagttttaattttgatgtta

>IGR3432a

ttctcttttattagctgactagcggctatctattttattgatctttcaaaaaacca  
cctcctggattcatggatttttgaagggttttcatgtctatctcctccaatctgc  
tctgatcttagttattcttgccttctgctagcttttgaatttggttactcttgccttc  
tagttttaattttgatgttaggatggagatttagataattcctgcttcttctgtgggc  
atttagtgctataaatttctcctaaacactgctttaaatgtgtcccagggaattctgtac  
gttgtgctttgtttcattgggttcaagaacatcttcattctgccttaatttcgtta  
tttaccagtagtcattcaggagcagggtgttcagttccatgtagtgtatgggtttca  
gtgagtttctaatacctgagtcctaatttgattgcactgtggtatcgagaaactgttgt  
tatgatttctgttctttgcatttgcctgaggagtgtttactccaattatgtggtcaat  
tttagaactagtgaatgtggtgctgagaagaatgtataattgttgattgggggtggag  
agttctgatgtcttttatgtccactgggtccagagctgagtttaagtcctgaatatcctt  
gtgaattactgtctcattgatccttctaataattgatggt

>IGR3433a

atttgctgaggagtgtttactccaattatgtggtcaattttagaactagtgaatgtg  
gtgctgagaagaatgtataattgttgattgggggtggagagtctgatgtctttatgt  
ccacttgggtccagagctgagtttaagtcctgaatatccttgtgaattactgtctcatig  
atccttctaataattgatgggtgggtgttaaagtcctccattattattgtgtggcagctct  
aagtccttctgtagatcttaagaactgttttatgaatctgggtgctctgtattgggtg  
calatacatttaggatagtttagcttttctgttcattgatcccttaccattatgta  
gcccttcttctgtttttgatcttctgttgggttaaagtatttttagagactagga  
ttgcaactcctgctttttgcttccatttgcctgataaatctcctccatccctttat  
ttttagcctatgtgtgcttttccatagagatgggtctcctgaatacagcacactgatgg  
gtcttgactcattaccaatttggcagctctgtctttcactggggcatttagccagttta  
catttaagggttaataattgttatgtttaattgatcctgtcattatgatactagctggtt  
attttgcctgttagttgatgcagtttctcatagtgtcaa

>IGR3434a

ttcacatgagatgggtctcctgaatacagcacactgatgggtcttgactcattaccaat  
ttgccagctctgtctttcactggggcatttagccagtttacatttaagggttaattgtt  
atgtgttaattgatcctgtcattatgatactagctggttatttgcctgttagttgatg  
cagtttcttcatagtgtcaatgatctttacaatttggtatgttttgagtggtgttac  
cagttgttctttccatgttagtcttctcaggagctctggttaaggcaggcctggtgg  
tgacaacatactcagcatttgcctgtctctcaaggatttatttctcttacttatgaa  
acttagtttggcttgatatgaaattctgggttgaataatcttttctaagaatgttgaa  
tttagccctgactcttcttggcttctagggttctgcagagtgtatgctgttagtct  
galgggcttcccttctgtgggttaaccgaccttctctctggtgcccttaacattttt  
cttcatttcaaccttgggtgaatctaattgattatgtgtcttggagttgctcttctcaagga  
gtatcttctgtgtgttctctgtatttctgaatttaattgttgacctgtcttctaggtt

ggggaagttctctggataatatcctgaagtgtgtttcc

>IGR3435a

taacccgacctttctctctggctgcccttaacatTTTTCTTCATTCAACCTGGTGA  
ATCTAATGATTATGTGCTTGGAGTTGCTCTTCAAGGAGTATCTTGTGGTGTCTCT  
GTATTCTGAATTTAATGTTGACCTGTCTGCTAGGTTGGGAAGTTCTCTGGATAA  
TATCTGAAGTGTGTTTCCAACCTGGTCCATTCTCCCCATTCTCAGGTACACCAA  
TCAACATAGGTTTGGTCTTTCACATAGTCCCATATTTCTCGGAGGCTTGTTCGTTCC  
TTTTATTCTTTTTCTCGATCTGTCTCTCGCTTATTTCTGTTAAGTTGATCTCAA  
TTCTAATATCTTTCTCTGCTTGACTGATTCAGCTATTGATACTGTGTATGCTCAT  
GAAGTTCTGTGCTGTGTTTTAGCTCCATCACGTTATGTTCTCTCTAACTGGTTAT  
TCTAGTCAGCAATTCATCTAACCTTTTTCAAGGTTCTTAGCTTCTTGCATTGGGTTAG  
AACATGCTCCTTAGCTCAGATGAGTTTGTATTACCCACCTCTGAAACCTACTTTGT  
CAATTCATCGAACTCATCTCTTCCAGTTTTTTCTCTGCTGGCGAGGAGTTGTATG  
CTTTGGAGAAGAGGTTTTTGGTTTTTGAATTTTCAGCG

>IGR3436a

acctTTTTCAAGGTTCTTAGCTTCTGCTTGGGTTAGAACATGCTCCTTAGCTCAG  
ATGAGTTTGTATTACCCACCTCTGAAACCTACTTTGTCAATTCATCGAACTATTCT  
CTTCCAGTTTTTTCTCTGCTGGCGAGGAGTTGTATGCTTTGGAGAAGAGGTTTTT  
GGTTTTTGAATTTTCAGCGTTTTGCACTGGTTCTCCCCATCTTGTGGATTATCTA  
CCTTTGGTCTTTGATGTAGGTGACCTCGGATGGGGTCTCTGTAGTTTTCTCTAATA  
GTCAGGGCCCTCTGCTGCAGGTCTGCTGTAGTTGCTGGAAGTCCATTCAGATCCTGT  
TTCCTGGGTATCACCAGTGGAGGCTGCAGAACAGCAAAGATTGCTGCCTCTTCTTTGGG  
AAGTTCTATCCAGAAGGGCACCTGCCAGATGCCAGCCAGAGCTCTCTGTATGAGGTGT  
CTGTTGGCCCTACTGGGAGGTTCTCCAGTTAGGATATATGGAGGTCAGGGAGCCAGT  
TGAAGAGGCAGTCTACCCCTAGCAAAGCTCAAATGCTGTGCTGGGAGATCTGTGCTCT  
CAGAGCTGTGAGGCAGGGACTTTAAGTCTGATGAAGCTGCACCCACAGCCGCTCTTC  
TCCAGGTGCTCTGTCCAGGGAGATGGGGGTTTTATCTGT

>IGR3437a

gtttctcccagttaggatatatggaggtcagggagccagttgaagaggcagtcaccct  
tagcaaagctcaaatgctgtgctgggagatctgtgctcttcagagctgtcaggcagggac  
ttttaagtctgatgaagctgcaccacagccgctcttctccaggtgctctgtcccagg  
gagatgggggttttatctgtaagccccctgattggggctgctgcctTTTTTCAGAGGTGC  
CTTGGCCAGGGAGGAGGAATCTAGAGAGGCAGTCTGGCCACAGTGGCCTTGTGAGCTGC  
AGTGGGCTCCACCCAGTTGAACCTCCAGGTGGCTTTGTTACACTGTGAGGGTAAAACC  
ACCTACTCAAGCCTCAGCAATGGCGGATGCCCCCCCCCACCAGCTCAAGCATCCCAA  
GTTGACCTCAGACTGCTGTGCTGGCAGCGAGAATTCAAGGCAGTGGATCTTAGCTTGT  
GGGCTCATGGAGGTGAGACCCACCAAGCCCAACCACTGGCTTCTGGCTTCAGCCCC  
TTCCAGGGGAGTGAATGGTTCTGTCTGCTGGCATTCCAGGTGCCACTGGGGTATGGAA  
AAAAAAAGTCTGCAGCTAACTCAGTGTCTCTGAATGGCTGCCAGTTTGTGCTTGA  
AACCCAGGGCCCTGGTGGTATAGGCAGTGGTCTGGGGGT

>IGR3438a



ccaccaagcccaaccacttggcttctggcttcagcccccttccaggggagtgaatggt  
tctgtctcgctggcattccagggtgccactgggggtatggaaaaaaaaagctctgcagcta  
actcagtgctcctgaatggctgccagtttgtgcttgaaccaggggccctgggtgga  
taggcacgtggcttgggggttgaagaccgtgggaaaagtgcagtatctgggccagagt  
acactgttctcagggctcagccccctcacagcttccctgggtaggggagataattccctg  
acccttgcgttctgggtgagggcatgccccaaactgcttccgctcgcctccgtgggc  
tgcaccactgtccaccagtcaccagtgagatgaaccaggtagctcagttggaaatgcag  
aaatcaccaccttctgcacgatcttgcctgggagctgcagaccggagctgttctattc  
agccatcttgccaactctcttaagaatttttactataatctatttcatatgttctac  
tgtatacaatgccaattgatgttgcctttattttatgcaatttagtgactttaaaaa  
ttgagattttgtaaaagaatatctgttctatagcattgcagtcaaagaatatgggc  
aataaaattctgcttggagaaattgctgaggtgttt

>IGR3439a

cttaagaatttttactataatctatttcatatgttctactgtatacaatgccaattgat  
gtttgcttttattttgcaatttagtgactttaaaaaattgagattttgtaaaagaa  
tatttctgttctatagcattgcagtcagaagaatatgggcaataaaattctgcttgag  
aaatttgctgaggtgttttatgacttttaagagtaatgtatagccaatgtttatggg  
ctatagtgttaatgtctctcttaagccaagtttattaattattaataatagcaatttc  
tcttctcatgaaagaaatagcttcacgatgttcattattatcatggtttatcagttt  
atcttgaattttcttattccttgttgtttggttattttgtaaactgttattcagccca  
gaaattgttacgaatgttgccttcattctgtattatcatagcaaatagtcctctgatt  
tcattgtctattactgcttctgatttctattttatgtattttgccatctattttaat  
ccatttgctgtgtctatataccactgctaaaacccaagtcacgttactgtgatccatt  
ttctagactattgacataggttctacttgggtgttctgcctcgtctttaccaacaaca  
atttattgttcaccagcagccaaagggaatatttccag

>IGR3440a

tgatttctattttatgtattttgccatctattttaatccatttgcttgtgtctatat  
ccactgctaaaacccaagtccacgttactgtgatccatttctagactattgacatagg  
ttcctacttgggtgttcttgcctcgtctttaccaacaacaatttattgttcaccagcag  
ccaaagggaatatttccagccaaaagccctctcatgacttccctcacacttatgcttct  
tatcatgccttatgtatatatgtataagcagccacagcatacttctccacctcatctc  
ctactgctcctcttgcctcactgtgctctagacatactgaccttatttctcctctta  
actatgctatatgtttccctcagggccttgcggtagctagtatctgtacctagagggct  
ccttttcatgatgaatgcttttttcatgactaagtacactgtcacctcttcag  
agaattctccctgacacctaaagtagccattccatcactaagtcattcttatgtttat  
ttttctcaaagcatttatcaatatctgaaatattcttgattgtttattctttactca  
gtaaaagcgattacctgtatgagttgttgactgttatattgctgacatctgtgaccctg  
cacatctcaagcaagtgacgtgggagtgagggtgtgata

>IGR3441a

aaagtagccattccatcactaagtcattcttatgtttatttttctcaaagcatttat  
caatatctgaaatattcttgattgtttattctttactcagtaaaagcgattaccttgta  
tgagttgtgactgttatattgctgacatctgtgaccctgcacatctcaagcaagtgcg

tgggagtgagggtgtgataaagtcaagagtcaggcctgatatagagaattgtctgtcat  
taaaaggaggtttccaaccttgagagtcagaggaaatggagactggcctagctatgtc  
tgaaggtagaataatataattataaactagagccacctctcagttatctgtatgatccc  
aggcagaaacacttagcatggtttctgatacagagttggtactcagaatgcatttctga  
aatgaatcaaagtatactgactgattgctgtatgcctctgtcctaggtgctatgggaaat  
tcagggaataaaaaagcacagcccatcctacaaggatgctacatctagcaggggatatta  
gccatttgaagagttaaataataaccacagatttctcaagaaatctagatgtgctgaaag  
aaggagggtctcctcccaactggatagttggggaagggttccaaaagggacaatatta  
gctacatcttgaagaagtgggtgaaaaagggaaggatgtg

>IGR3442a

gcccacctacaaggatgctacatctagcaggggatattagccatttgaagagttaaata  
ataaccacagatttctcaagaaatctagatgtgctgaaagaaggagggtctcctccaa  
ctggatagttggggaagggttccaaaaagggacaatattagctacatcttgaagaagtgg  
ttggaaaaagggaaggatgtggtttgggtggactagagagtgaggagtaactgataaagatg  
ttgtagaggccctaatgagcatgacgtgtgggagaagtaaaagggttcatttggggtaga  
aaaggcatacagggcatagagtacttaggtcctgacctagtgagcattcatcttgattgc  
taagcttaggatttgggctttacgttgggtacaggaaggatttgaagcctttgagc  
caggaagaaagaattatagtagaagtgtctcaagaagtctattctgcattaagacaag  
ggccattaaaaaaaaaaaaaaaaactccattgatgcaagatgtctccttttgccttttc  
tgcccttaccctctgcctccccccaccctctctcaatgtggtctcactctca  
cccaggctggagtgacgtggtgtgatcacagctcattatagcctcaactcctgggctca  
agcagctttcctcctcagcctcccaagtagttacaacta

>IGR3443a

aaaactccattgatgcaagatgtctccttttgccttttaccctatctgcct  
ccccccaccctcctctcaatgtggtctcactctcaccaggctggagtgacgtgg  
tgtgatcacagctcattatagcctcaactcctgggtcaagcagctttctcctcagc  
ctcccaagtagttacaactacaggtacatgtcaccatgcccggctaattattaaaagttt  
ttctttagagacaagggtcactatgtcaccagcctggttaactcctggcctcaa  
gtgatcctctgcctcagcctccaaagcactagtattacattcatgagccactgtccc  
agcttgccctttcttattcttccctcccccaacctggatcagcctcctgggatattc  
cctggagtgacctctgattactaccatccccaaagcagtaacaaggtcagcatcagacag  
tttatttgctagtggtactgcagctgaaccctggctagcatgtcagatatggcagaga  
tattagagttttcaaagggaattctgcatcctggatacctgaaatagagactatgtt  
ggggataagtagactactttgatgccttcagtggtgaactcatggggttctgggtagcca  
ggggcattatccaacatcaaaaaagcttttaaggcaatc

>IGR3444a

gcagctgaacctggctagcatgtcagatatggcagagatattagagttttccaaaggg  
gaattctgcatcctggatacctgaaatagagactatgtttggggafaagtagactctt  
gatgccttcagtggtgaactcatggggttctgggtagccaggggcattatccaacatcaa  
aaaagcttttaagggaatcccttactcacaagggtacttctgacctcagggacaaagca  
ttgatggaaccaatacagaaaaaggattttcatcatccaggccttctctacagctgaaa  
gactggcagctggtatacaactgttccctgcaaggattgggagtttagcagctttatggat

aagggcaatgctagtgttctgttcttactaataaataatcgttgtgacactttt  
tttcagaatagggcatttttgtctgtattaaaaacctgttgaggcaggtatccttgtcc  
tcaattattttctaatgatacctgggaacctatctcctgcttggtcagcagaaactg  
cttctcctattaccttgataattttaaggccaaacctctgctaaaattatcaaacatc  
ctttgctggcattaaattttcagctttagctccttcaccttctatttgttgtttatt  
tatttaagacagaatctcgtctgtctcccaggctggagt

>IGR3445a

acctgggaacctatctcctgcttggtcagcagaaactgcttctcctattaccttgata  
ttttaaggccaaacctctgctaaaattatcaaacatccttggcattaaattt  
tcagctttagctccttcaccttctatttgttgtttatttatttaagacagaatctgc  
tctgtctcccaggctggagtgcagtggtgcaatcttgctaactgcaactccacctccc  
aggttcaagtattcttgtgctgcacccctgaatacctgggattacaggcatgtgcca  
caatgccagctaattttgtatttttagtagagatgggggttcaccatgttggccaggc  
aggtctcaaactccctcctgacctcaggtgatcaggccgcttcgacctccaaagtgtt  
ggattacagccatgagccagtgtacctggcctcttcaccttctttgtttatgttgc  
atataatgactctgcttttctcaagtcacagtaggggtctatagtatacctttctcta  
gcaatcctctacccacataaagctgcaatttcaatatgagataaaaagataatttcacaaa  
aaaatgcaagggttttgacatggtgacatagctgtggtgatggcttcataaatttcatt  
ttctttttaacaatggcttactactagattcatttate

>IGR3446a

ctcaagtcacagtaggggtctatagtatacctttcttagcaatccttaccacataa  
agctgcaatttcaatatgagataaaaagataatttcacaaaaaatgcaagggtttggac  
atggtgacatagctgtggtgatggcttcataaatttcattttctttttaacaatggtcc  
ttactactagattcatttatcttgaatggtggacacactgcagctgcagacctcaatgta  
cagtacatattaatggattcagttttcttaatgtcatgacttttcttcttggga  
gcactttccagcatggttggaagttgaggcctcttcaactcactccttcttctg  
ggctcctctctatggaaaacaggtaagtcataaatttcaaaactgtgactatggttccaac  
catagtttcttggccacttgccaaagtgggacttctactaatgggagtaaaaatgaa  
ggtttatccagattatcagtaggatcacactgttctgtcattcgggttctagactgt  
ttcatataactcagtttaccatatagcaccttcttgggctttctgaaaatcac  
ttgtacaagatttttgtgtgtgagcagattcgtgagaagacttgcggtgccaatgtgtt  
ttatgttgccatggtgcttgccttagcttcatctgcat

>IGR3447a

taggatcacactgttctgtcattcgggttctagactgtttcatataactcagttcac  
caatatagcaccttcttgggctttctgaaaatatactgtacaagattttgtgtg  
tgagcagattcgtgagaagacttgcggtgccaatgtgtttatgttgccatggtgctg  
ctcttagcttcatctgtcatgagggttttgttctcagtagtgtttctcctacaaa  
ttccactacacatctctcctacccttggtaaacctgccccaaacaacagagcaatt  
aatctagaactgtgtgtccagtacagtagccattagccatataatggctatttaattaa  
tatggccaattaattaaaataaaataaaattagaaatttaaaactctcagttgccgtaac  
catatttcagggtgttcaatagccacatgtgctagtagcttctacattggacagtgcagat  
atacaacattctgattaccacagaaagtctattggataatgctaactagaataatact

gccaaattccagcaggactatcaaggtagatgtaagtactccaaggcacattcctatcac  
gttccctgttgccactatagaaagtataacttcttcattattccagttgcccatctggta  
actattagatcaggcacacgtgcacatgcacgcacacaca

>IGR3448a

cagaaagttctattggataatgctaattctagaataatactgccaaattccagcaggacta  
tcaaggtagatgtaagtactccaaggcacattcctatcacgttccctgttgccactatag  
aaagtataacttcttcattattccagttgcccatctggtaactattagatcaggcacacg  
tgacatgcacgcacacacacacacagacacacacacacacattaattcttacaga  
ctggatattctaaattfacaagaaggaggaaaagcattttcctaattgctccaaaatttt  
cttaccataataaaagcgagtaccttacatttttgc aaagaagtcctcactttcaa  
attgtgcccccttggcctggcataaataagaaaacaaaccattttgaagctatctca  
tttaatgaaaggtcattcagctataaaaggatgcaaagaaagttttcttatctattcct  
tttaagaccctaattatgttctacatttccccagttcctgctgagctctgaaggtag  
gagtgagggaagcttgcattggaaaggccttcttaggtgcagtagtattgttattttaca  
ccttaacctcaaaggaagtccttcttttctgggatggagcactttagttctcataact  
cttctctgaagtcattgcagagtgggtggaggaaggtgag

>IGR3449a

ctcacctattccccagttcctgctgagctctgaaggtaggagtgggaagcttgcattg  
gaaaggccttcttaggtgcagtagtattgttattttacacctaacctcaaagggaagtc  
cttcttttcttgggatggagcatttagttctcataactcttctctgaagtcattgcag  
agtgggtggaggaaggtgagggtagtcttggctgaattttcttggtaaacttacaag  
tggatctatcaaaaccagagggtttttcttaaccacaccaccccagaattccatttcc  
tgcagatgtagcagcagcagcttagccatttggcccaggcctctggaccatgccttgg  
gagggtcttgcctctgccttgcattccattagaacttctccagtggaaagagtgcagta  
cttggcctggcctgggtgggcaggccttttctctctgacttggctaaatgaaatgggat  
ttaaggtagctctccctgtgggttaaagacattttgctctatgctagagaaaaaggagg  
tagtggttctatctgccactactacatggatgtgaacagaacctctgctctgatgca  
gaccctggccttcccagctcctattctgtttgacttctgcacaccccttttctga  
ccctgatactatcccagatcattattcttctctagtcct

>IGR3450a

ggtaaaagacattttgctctatgctagagaaaaaggaggtagtgttctatctgccact  
actacctatggatgtgaacagaacctctgctcctgatgcagacccttggcccttcccag  
ctcctattctgtttgacttctgcacaccccttttctgacctgatactatcccagatc  
attattcttctctagtcctaccttgttctagccagtccccagacccaaggtgagcta  
agggacagtctctcaaagtctgggcagagagcctcaggaagtggggatggctgagaga  
agaggggagtgagggggataggcatacagactctgaatgctgaccttcttattttct  
gtcttgaactatttcaacagaggaaccttatactatagccctgtggctctctagtag  
cttgtacctgttctctgtccataattgtgagcgtttagctgtggtgcaggtgagagacc  
catttcccacctcaggagccaggaaggcccaccagtaggcaggagggccttaggcaga  
gatatacaggagagcagagacgtctggagctaggtaccgggtggtcagcagggcctctg  
cagagggagcagcctccttggccttgccttgcctgacttctaatactgctgtaaaaatt  
agttttgttttaagcaccccaatgatgcataatacac

## &gt;IGR3451a

ccaggaaggcccaccagtatggcagggaggcctaggcagagatatacaggagagcagaga  
cgtctggagctaggtcaccgggtggcagcagggcctcctgcagagggagcagcctcctt  
ggcctttgcttgctgacttctaataatgatcctgtaaaaattagttttgttttaagcacc  
ccaatgatgcataactactctttgtcaaatctaaaaagagaaaatccttttttt  
tttaataaaaaagaaagtatttagcttaagattgtaaaactgtaaagttaaataaag  
tggccgccctttggctgccctgatcccccactccctactccagcttctgcaagtaaccaca  
attctcagctaggtgtatatacctccagacgtctttctatacatttactttcctattg  
tttaaccaatttgagttgtcttttcttacttaaatctgaaagtgttctaaccaatt  
taataacaattgcctcagagctgtttattgaaaggttcttcgtttcatactgacataaaa  
cgccagttgtgttagacctggccagggcctgcttctcaagaccagagtaaacatgaa  
ctgtaaactccaaaactgtacaactagtttttaagaaagattgccaagatactggcac  
aagacttttaaggcctaggattgcatattagacctatg

## &gt;IGR3452a

ctgtttattgaaaggttcttcgtttcatactgacataaaacgccagttgtgttagacct  
ggccagggcctgcttctcaagaccagagtaaacatgaactgtaaactccaaaactgta  
caactagtttttaagaaagattgccaagatactggcacaagacttttaaggcctagg  
atttgcataattagacctatgtaattgtggcttactgaagagcagagttcttcttcttg  
gtagtgaagcttcttctgggtctcacacaggaaggactgtaaagggcagtgagggtctg  
aatctggactcttctgacatgaggacatctcatttatgcaggctgccaagaccattga  
acttggaggatgcccttgtgagaaagcaagaaaggcagtgaggagctgcagccccacat  
gcacctcatctcaggaacatccttctgacttttttttaattgtacagagctgttt  
tttttattatactttaagtttttaggtacatgtgcacaacatgcaggtagttacatat  
gtatacatgtgcatgttggtgtgtgcaccattaactgtcatttaacattagggtata  
tctcctaattgctatccctccccgtccccccaccacaacagccccagtggtgatgttc  
cccttctgtgacctatgtgttctcattgttcagttccac

## &gt;IGR3453a

tttaggtacatgtgcacaacatgcaggtagttacatatgtatacatgtgcatgttgg  
tgtgtgcaccattaactgtcatttaacattaggtatatctcctaattgctatccctcc  
ccgtccccccaccacaacagccccagtggtgatgttccccctcctgtgacctatgtg  
tctcattgttcagttccacctatgagtgaacatacgggtgtttggtttttgtccttg  
cgatnnttgcctnagaatgatggttccagcttcatccatgtccctacaaaggacatgaa  
ctcatcctttttatggctgcatagttatccatggnntatatgtgccacattttctaat  
ccagtcnatcattgttgacatttgggtgnttcaagctttgctattgtgantagtg  
cacantaacatacgtgtgcatgtgtctttatagcagnatgattataatccttgggta  
tataccagtaattgggatggctgggtcaaattggtatttctagttcnagatccntgagnaa  
tcnccacactgnttccacaatggtgaactantttacantnccaccaacagtgtaaan  
tgttctatttcnccacatccnccagcacctgtgttctnacttttnaatnancac  
nntnnaactgggtgagatgggtatctcattgtggtttt

## &gt;IGR3454a

ctgggtcaaattggtatttctagttcnagatccntgagnaatnccacactgnttccaca  
atggttgaaactantttacantnccaccaacagtgtaaaantgttctatttcnccacatc

cnncaccagcacctgtgtttcctnacttttinaatnancacnnttlnnaactgggtgtgagat  
gggtatctcattgtgggtttgatttgcatttctctgatgccagtgtatgagcatttttc  
atgtgtcttttggctgtgtaaatatctcttttgagaagtgtctgttcatactctcgcc  
cacttttgatgggttttttctgttaaatttgagttcattgtagattctggatattag  
ccctttgtcagatgaatagattgcaaaaatttctcccattctgtaggttgcctgttcac  
tctgatggtagtttcttttgcgtgtgcagaagctctttagtttaattagatccatttgc  
aatttggcttttgttgcattgcttttgggttttagacatgaagtccttgcctatgtc  
tatgtcctgaatggattgcctaggttttctctagggttttatggtttcaggtctaac  
atgtaagtctttaatccatcttgaattattttgtataaggtgtaaggaaggatccag  
tttcagctttctacatatggctagccagtttcccagcac

>IGR3455a

ttgcttttgggtgttttagacatgaagtccttgcctatgtctatgtcctgaatggattgc  
ctaggttttctctagggttttatggtttcaggtctaacatgaagtcctttaatccatc  
ttgaattaattttgtataaggtgtaaggaaggatccagtttcagctttctacatatgg  
ctagccagtttcccagcaccatttattaaatagggaaatcggttccccatttctgtttt  
tgtcaggtttgtcaaagatcaggtcgtttagatatgcggcattatttctgagggctctg  
ttcgggtccattgggtctatatctctgttttgggtaccagtaccatgctgttttgggtactg  
tagcctttagtagtatagtagaagttaggttagcatgatgtccagctttgttttttggct  
taggattgactctgcaatgtgggtcttttttgggtccatatgaactgaaagtagttt  
ttccaattctgtgaagaaagtcattggttagcttgatggggatggcattgaatctataaat  
taccttgggcagatggccatttcatgatatgtgttcttctacccatgagcatggaat  
gttcttccgtttgttgcctcttttatttcatgagcagtggttagtagttctcctt  
gaagaggtccttcatgtccctgtaagttggattcctagg

>IGR3456a

tcattggtagcttgatggggatggcattgaatctataaattaccttgggcagtatggcca  
ttttcatgatattggttcttctacccatgagcatggaatgttcttccgtttgttgtat  
cctcttttatttcatgagcagtggttagtagttctccttgaagaggtccttcatgtccc  
ttgtaagtggattcctaggtattttattctcttgaagcaattgtgaatgggagttcac  
tcattgtttggctctctgtttgtgttattggtgtataagaatgcttgtattttgta  
cattgattttgtatcctgagacittgctgaagttgcttatcagcttaaggagattttggg  
ctgagacaatgggggttttctagatatacaatcatgtcacctgcaaacagggacaatttca  
cttctcttttctaaatgaataccctttatttcttctcctgcctgattgccctggcca  
gaacttccaacactatgttgaataggagtggtgagagagggcatccctgtcttgtgccag  
tttcaaagggaatgcttccagttttgccattcagtagatattagctgtgggtttgt  
catagatagctcttattttttagatatgtcccatcaataacctaatttattgagagttt  
ttagcatgaagggtgttgaattttgtcaaaggccttttc

>IGR3457a

aataggagtgggtgagagagggcatccctgtcttgtgccagtttcaaagggaatgcttcc  
agtttttgccattcagtagatattagctgtgggtttgtcatagatagctcttattatt  
ttgagatatgtcccatcaataacctaatttattgagagtttttagcatgaagggtgttga  
attttgtcaaaggccttttctgcatctgttgagataatcatattgttttgcattgggtt  
ctgtttatatgctggattacattattgattttcatatgttgaaccagccttgcattccta

gggatgaagcccacttgatcatggtggataagcttttgatgtgctactggattgatt  
gccagtattttattgaggattttgcatcgaatgttcacagggaatttggtctaaaattc  
tcttttttggtgtctctgccaggcttgggtgcaggatgatgctggcctcataaaat  
gagttaggaggaggtccctcttttctattgattggaatagttcagaaggaatggtacc  
agctcctcctgtacctctggtggaattcggtgtgaatccatctggtcctggactttt  
ttgttggtgaagctattaactgacctcaatttcagagcctgttattggtctattcaga  
galtcagcttctcctgggttagcttgggagagtgtatg

>IGR3458a

ttttctattgattggaatagttcagaaggaatggtaccagctcctctgtacctctg  
gtggaattcggctgtgaatccatctggtcctggactttttgttggtgaagctattaat  
tactgcccaatttcagagcctgttattggtctattcagagattcagcttctcctggt  
tagtcttgggagagtgtatgtgtcagggaattatccattctccagatttctagt  
atttgcatagaggtgttatagtattctctctctttttttttttttttttttttgagac  
agagtctcactctgtcaccaggctgtagagcagtggtgcaatcttggtcattgaaacc  
tcacctcccagggtcaagcaattctgtgcctcagcctctggagtagctgagattacag  
gcacacactcccatgcccggataatttttttttttttttttttaagtagagatggg  
gtttcacatgttgccaggctgatctcgaactcctgatctcaagtgtctgcctgtctc  
ccaaagtgtgggattacaagcatgagccactgcgcctggccggttctggtataattct  
tgatcttattaaggatgcttcttagtagcttagtagacaaagaattttctcataaacg  
galgttctgttgagatgatcatcttttagattaaccaatt

>IGR3459a

ctgatctcgaactcctgatctcaagtgtatctgcctgtctccaaagtgtgggattaca  
gcatgagccactgcgcctggccggttctggtataattcttgatcttattaaggatgct  
cctagtagtcttagtagacaaagaattttctcataaacggatgttctgttgagatgat  
catctttagattaaccaattattgtggagaagtacattggtagatttccataatcaaat  
ttgcattcctgggaatgacctgcttgatcatgatctgttattctttaattcaattgg  
taatgtcttattcctactgagttctacctcagtaaaaatttccaaaaactgtgcctag  
cctccaggctgggtggcatgttcctctctatgcaccgagagcaccatgtctgtctttt  
ctaatacctctctagtttgaactacaatctggattataattacatgtctccctcagt  
ggaatatgccattgttgagagacagactttgtcttctcctaattgtatcctcagtgcc  
cagataaggcctgatttaaagcaggccttggaaaatatgtctagtctgtgcgaaaatgc  
ttaccattcccctgacagggacaagtccaagtcccatactagttagctttgtgcgca  
gagccctggccttgttggtccagcttatcatgcagacaag

>IGR3460a

gacagactttgtcttctcctaattgtatcctcagtgccagataaggcctgatttaa  
gcaggccttggaaaatatgtctagtctgtgcgaaaatgcttaccattcccctgacaggg  
acaagtccaagtcccatactagttagctttgtgcgcagagccctggccttgttggtc  
cagcttatcatgcagacaagagccatgtcaatactggtggaccccgctgtgtgggagc  
tgagagagccagatagctcacagctcctctcagttacacctaagctgcctgtggggagc  
tcaggactctgcatgcgcctccacatcttcaggccgaagattctccatcactccaagaa  
agcacgctcaaatgtgaaagcagataaatcattagcacctgtgtggtgggctgttactg  
ttcaacaggggttcttcttgggaacctaaagatactcatgtgtaccttagcagcagct

aatgggggtggatggaagtgggtaccaggcattccagtcacccagggatgcctaggtccc  
ttaccaggaagcagcgagagaggcataatggacacaactctgtctttctatagaagac  
acctgtttcaggccaggcctttatcttctgaagctgacccactgaagggtcattgtgc  
tttggttagaaaaccactgcaaccaaagccatccagtgc

>IGR3461a

gtcaccaggcattccagtcacccagggatgcctaggtccctttaccaggaagcagcgaga  
gaggcataatggacacaactctgtctttctatagaagacacctgttcaggccaggcct  
ttatcttctgaagctgacccactgaagggtcattgtgtttggttagaaaaccactgc  
aaccaaagccatccagtgcacaaagttagtgggatccctcatactggagcaggcagacacct  
actgtcccagtagtctcatgtcagaacaacactcaacatacattgtctttgtgccag  
cttgggagctggctgtgaggactgagggatcccagggtaccttgagtcttgaaccata  
cagtggatggacacagacacagcaccatcctagggtggcagatactccatgctcatcg  
tgccagcctgctcatcaacagaatcaccacctccattctgtcaccaccagggtattac  
tgagactcttctacatgacatgtgccattgagggtactgggagaatagcagcagacntat  
aataaaaagccccctgcccttgaggggggtacctggttccagggtgcacccccagtta  
tctcatggtttaggtggcactattatgactaccaagttgtgacagatgatcagtgc  
ttccttctgtggctgcagttatctgtgcacagatgctgg

>IGR3462a

tgtgccattgagggtactgggagaatagcagcagacntataataaaaagccccctgccct  
tgagggggggtacctgggttccagggtgcacccccagttatctcatggttaggtggcac  
tattatgactaccaagttgtgacagatgatcagtgtcttctctgtggctgcagtt  
tatctgtgcacagatgctggcatccttcaatccagggtcaggttgggtcagggttag  
cttgaggcagtaggaagaacagagctctctggatggttaggcaagctgtccaacccat  
gactcacaggctgtatactacccatgacagctttgaatgtgaccaacataaattggtaa  
actttcctaaaacattatgagatttttgccttctttttttttttttttttttttg  
ctcatcagctattgttagtgaatttatgtgtggccaagacaattctctcc  
aaagtggccagggaaccaaagattggacatctctggttagagattcagttggttc  
ttcaacttcagttcttgggtgacagggtggcctctgacttgcctcacatcctcaatccg  
gccaccactggtttctgcacacagggaacactggcaatgttggtgaaacaatgagt  
gagagccaagtccaagtgtgggctaacctcgtcacag

>IGR3463a

aaagattggacatctctggttagagattcagttggttcttcaacttcagttcttgggtg  
tacagggatggcctctgacttgcctcacatcctcaatccggccaccacctggtttctgc  
acacaggaaacacttggaatgttggtgaaacaatgagtgagagccaagtccaagtgc  
tgggctaacctcgtcacagccaattaggcataaagtaaccagggtgtaagagaagtgg  
aaacagagatgcagatgctcaaggaggccagacactgcctcctctcttggtagtcc  
tgtgtcagaaggggcacacggagacgtcgttgggtgtccatacggcagttctctgc  
ggcagtgagaaaagctctggtctgtgtgtatagtgtgcatgcaggggagtgcatatgt  
gtgtatatttgcctacatgcacatgcatgttcacattggctctggtcccccacacaacac  
cattatagggccctgcttagccatcctttctgcagtgggggggggggagggggaaaggggt  
tcctgactgtgtgtacatttggatagtcactgtttttgtgtgcagcactcctacctc  
acctacccacccttagaggcaggcagggtgatgactgaagcatcaggcctgtggttct



gtaacaggaagtgatttagatgctgaaagctaattttaga

>IGR3464a

ccatccttttgcagtggggggggggaggggaaaggggttcctgactgctgtgcactt  
ttggatagtcactgtttttgtgtgcagcactcctacctacctacccacccctagagg  
caggcagggatgactgaagcatcaggcctgtggtttctgtaacaggaagtatttaga  
tgctgaaagctaattttagatgaaatgatatggggttttaagaatcttcagggttgg  
ttcaggctcaaggcttagccccctgctcctcttgctacaggggacaggcagttccca  
ttgtcctgtcactgtctngctgggtgaactcatgcctagctgggcagggttcttagga  
gaaagccagtgtgattttcctggattcagaatgtttaagtcattgttttggccttg  
aacaccagagtcctgtgactcagcacaggcctggctctaggccaagcagacacaggact  
cttaccctggaangggactgcctggaggctccaaggatcttgttaggacagagatgtc  
caccctacccaggctgaggcctgggccagaggctcagatgaggcttctgggcaaaaaaa  
gtatcatcttgggtggcagacacttaggtggggcctcttctccagttagccctgtcctg  
agcctcttagcagggggcggtttctgaccaggtgccaca

>IGR3465a

gcctggaggctcccaaggatcttgttaggacagagatgtccaccctacccaggctgagg  
cctgggccagaggctcagatgaggcttctgggcaaaaaaagtatcatcttgggtggcaga  
cacttaggtggggcctcttctccagttagccctgtcctgagcctcttagcagggggcgc  
tttctgaccaggtgccacactaaggatccatcctgattgagccctgtagattgggact  
cctgatagcagcagacacaaaaagaaactgaggagtaggcacagaactctgagagtcctgt  
cctcctgggtgtcggggctccactggttggggaccttggagcctcatggtttctgtctctg  
ccaaggcctgagcacaggaaatagaaggttgggcctccctggtcacctctgcaagggtct  
tcaaagcccattttaatctgttgccttccctaggtcttccacagcaccctatacca  
gagaatgtctctccattatcagagaagcagccaaatatcagcatgctaagagagatgtc  
ccagggttacatagcttctcactcaggcagcattggagccagccaggccaggagcttaccct  
gtcccatactaccgatgggatgccagcattcagggaagagctcactctgcatactc  
atctagacagcagccagcctcatgaaccctaccacaaac

>IGR3466a

cagagaagcagccaaatatcagcatgctaagagagatgtcccagggttacatagcttcac  
tcaggcagcattggagccagccaggcaggttaccctgtcccatactaccgatggga  
tgcccagcattcagggaaaagagctcactctgcatactcatctagacagcagccagcct  
catgaaccctaccacaaacctgggacctctggaaagccaagtataagtctctgccagtt  
cttagtccaccctgttctgttgtgtgtgaggtatagcttgggagatgaggcgaggcct  
ataggtcttgggtgtacacaagaagaacacttctgcctagagaggctgtcagacagaca  
ttccagggacacacagcagacagccttcatggccttcatgaccagtcggtccctgtgg  
aagacaagttaggacaggacagatgattagcccagagccaaaactgagctcaaaccgcaga  
agaggagagcattctcacaaaagctccagtgttgcagcacaatgacggaggttagatggt  
gtgagctaagccctgttttgagagtccatagaaggtgtctttgacctatttcaagggc  
tgtgtgtgtaggaggaattttggccacatcataaagagttttgtggccacctctgat  
acctagctcaggaagtgtattttccatgattaggttat

>IGR3467a

aagctccagtgtttgcagcacaatgacggaggtagatggtgtgagctaagccctgtttg  
agagttccatagaaggtgtctttgacctatttcaagggtgtggtggtaggaggaattt  
ttggccacatcataaagagttttgtggccacctctgatataacctagctcaggaagtgtg  
attttccatgattaggtatttagtcaccaaagtattgctgccccagacctggcccct  
gtgctgcaggaggctgacagagatgccccctccagcactgcagccctgcctccccagctgc  
aggccagaagccaaggaggccccctgagtactgatgttgggccccctggtgcttccctgt  
ttgtggaacccacagccccattccaacttctgagcactttgcctacccaggagattt  
aactggggcaagaaatcctgtaagatctcaacaaacggacgtgggtagaatagctcccag  
aaaatctactcaagggaagacctatgactccaaggtatcaataatggtgagggactcag  
tctgtaactttctaggacagtttcatttcatttaaaaatttaagatgaaagaatttatt  
aatggaagttagttcatgaagcatttcaggaaaccacacaggactcagagctccttgcct  
ttagaaagacaggactgtgtcagcctgtgtggcattcaca

>IGR3468a

cccatgtactccaaggtatcaataatggtgagggactcagctgttaactttctaggacag  
tttcatttcatttaaaaatttaagatgaaagaatttattaatggaagttagttcatgaag  
cactttcaggaaccacacaggactcagagctccttgcctttagaaagacaggactgtgt  
cagcctgtgtggcattcacacctggattcccagggtgggcttcccttagaaaggagaaat  
tagttgcagcccactctctgtgggaatctcacctggtgagcccccttctccaaactcct  
agagtgtctaccccagctcctgggctcagctggtgcctctgaggagcgtacctgctgtt  
ggaattggcggagcgtgccaggctgaggagcaggagagcctgccccctgggccccctgcca  
ccaaagccatgggggcagtcgcatgcttgcctgtcagttggtggcatttaggtggcatt  
aggaatgtttgtttctaatattttgtttgtttgtttatttgaagtaatccct  
cttttccaaaggcctgcatgctgccttgattctggaggagccagggttgcccaatga  
cccaaatgtttggaagtcttaagggcccttttcatgccctgaagtcacagaagtaggt  
aatcacccacctacctccccagggtaccggatatngatgt

>IGR3469a

attatttgtttgtttgtttatttgaagtaatccctcttttccaaaggcctgcat  
gtgccttgattctggaggagccagggttgcccaatgacccaaatgtttggaagtctt  
taagggcccttttcatgccgtgaagtcacagaagtaggtaatcacccacctacctccc  
caggtagccgatatngatgtgggtcagagggggctgagaaataactcagcctcaaagcct  
tagaccgtcttctcagggtntaaccgtcatctcaggatagacaattcaggaagaggatgc  
cttgccacacatgaggangtgggagtggcaatgagcaggcgttgattcagggcaggtt  
tagaggaaggtttggcaggtgaatgatggtttgcgtacaaactacagacaagaaattgag  
aggacaactgggtataggtgaggtgactactctgccctcagaaaagtggaggtctgagtt  
catgggggaatgctcttaataacacagatgggcaaaactccagacattagtgaacctt  
cttcgttagacattctttcagggggtttctcacttcccaatcaccttaatcatcagt  
gctgaccacaactgatactttctgggtgactcaaggccagtgtcaggcgggccaccgt  
gtgtgaatccagctgaagatgcaggtgcagctggaggaa

>IGR3470a

ataacacagatgggcaaaactccagacattagtgaaccttcttcgttagacattctttc  
aggggtttctcacttcccaatcaccttaatcatcagtgtgaccacaactgatacct  
ttctgggtgactcaaggccagtgtcaggcgggccaccgtgtgtgaatccagctgaaga

tgcaggtgcagctggaggaaggactagccctgaatgggcaccaacccccaaaagaatccac  
tgactgtcacttaggcaaaagtccgcagtcacattgcttttgatctccgcctcactc  
ttcctgagaggtatttggtgcaaatagccggacctctggagtgggagacacctgactcca  
gttctgccacttctccttctgctagttgccagaccttgacagtttgtaactttga  
attlccccctgtcaaatnattcatttactcatgcactcactcactcattcactcaacat  
aaattcctgagtagcttccatgtgccaggtactagtttaggtacttgggagtgatcagta  
gaggaaataggtgaagtgttccgccttcagaaatgtgtatcatggcatgggaggtacaaaa  
taagcaacaagctgttaacaagttagaagtggtgaagtgtatgggaaaaaacagagca  
agataagcagtgcttggagtgggtgtagaaggggctgcaa

>IGR3471a

tgtgccaggtactagtttaggtacttgggagtgatcagtagaggaaataggtgaagtgttc  
cgcttcagaaatgtgtatcatggcatgggaggtacaaaataagcaacaagctgttaac  
aagttagaaagtggtaagtgtatgggaaaaaacagagcaagataagcagtgcttggagt  
ggltggtagaaggggctgcaatctaaacagtatggacatggcagatctctgagaaaataa  
catctgagcaaaagactgaaggtgttgaaggcgttagcccttttaggcacaggggaagag  
ccagcgcaaaggctctgaggctgggtgttcaaggagcaacatggaggcaagtgtggctg  
gagcagaatgagtgagcagagaggggtcacaggggaaaagaaagtgtgaaagataaagg  
ggaaagtgtgcggaccttgacggccactgtgggaactatggcttttctgtggtaaaaca  
cagaactccaagaggggtttgaacagagggctatgatctactagacataacaggatca  
ctctggctgctgagttgagaatagattatagagcaggggaacaggtagaagcagggaaatt  
agctaggcttccactgaagtattctagaagataatagtggtggatcatcatggatt  
cagtggaagtggggagaaatgagaaatgttgattctgga

>IGR3472a

gaacagagggctatgatctgactagacataacaggatcactctggctgctgagttgaga  
atagattatagagcaggggaacaggtagaagcaggggaattagctaggcttccactgaagt  
atattctagaagataatagtggtggaatcatcatggattcagtggaagtggggagaaat  
gagaaatgttgattctggacctgttttgaagaagaatcatcagcatttgctgatggct  
tagatgttgagtatgagagagagatcagagtttaaggatgactccaagggttttctctga  
gcagctggaaagaaggatttgacctcaactgagacaagaagactatatgtggggcaggca  
tgaagggggaagattaggaggtcacttttagcacacataaaatgggataattatacttcaca  
ggctgtagttaggggttaaatatgataatatgaaaggctttagtagcaagctctta  
gtaaatgtcactttcccttttctctcaagaggtggtgaagcatgaacagctggggt  
cccaaaccaatttgactaattgcctttctgtagaagtaatgtgccaatcagatgccaaag  
acagcctcctcctgtggttttctcactcttcaggaaacttctactgttgctaacagggt  
cttlagatttgtaaagggttctcggtgatgttgacacac

>IGR3473a

ttcttctcaaagaggtggtgaagcatgaacagctgggggtcccaaaccaatttgactaa  
ttgcctttctgtagaagtaatgtgccaatcagatgccaaagacagcctcctcctgtggtt  
ttctcactcttcaggaaacttctactgttgctaacagggtcttagatttgtaaaggtt  
tctcggtgatgttgacacactgatgtgatgatgatttctgcatcaggggcactgtggcg  
cccagacagcctccatctatgtgtcaccgtttccatatcagtcactctgctggtgtcac  
atgagcaagaggcatgatctcttcagcagaacagtttggttctacagacacacaccgaca

tccatatcactccttgccccccacccccaggtgttatgggactgtgaaaaattactt  
acctgtgaggtaggtactattatcccatfittatagatgaagaacaaagggtcagagagg  
cttggtatatgaattaagtgaatgagtatatgcaaaatgcttagtaccactgtgcctag  
aacctagtaaatgcttgagaaaagggttaaccattgtaataaatgtaatcattgtcagta  
gttcaagaaaggaaggattttctccaaaactacactttgttataaaagacagtaggctg  
acttaacattaggtcacaaactttatcttagctatttgaat

>IGR3474a

aatgagtatatgcaaaatgcttagtaccactgtgcctagaacttagtaaatgcttgaga  
aagggttaaccattgtaataaatgtaatcattgtcagtagttcaagaaaggaaggattt  
tctccaaaactacactttgttataaaagacagtaggctgacttaacattaggtcacaa  
tttatcttagctatttgaatcatttgattctgaataatattgttggcatgtggcacatta  
caatttttaaatgaacaaaacaaaaaagggtatagctgtatagtagaagcattttcata  
cagggaataattggatatacttgactttatggatgagaaaaatccaggtagctggaaggat  
gtacccaaggggccatcttggatatgggatgctcttacttgtttgaattttaacagt  
aaacttaaatcattcttaggacaataggctagtttgaagatgtctctgaaatgtccgg  
taagatttgtgtggtacctgtgtgattaactgtttcagtggttacattgctttatctga  
ggggccacctgactgtgctgacacatgatggacagcccaagtcagggtgcatgagatag  
tgaggcctagcaaaacagattccttagaagtgcccaacttccctcttcagctgaggttg  
gtgactgctcagaccagagccgtgcacatgcttagtcat

>IGR3475a

tgtgattaactgttttcagtggttacattgctttatctgaggggccacctgactgtgctg  
acacatgatggacagcccaagtcagggtgcatgagatagtgaggcctagcaaaacagat  
tccttagaagtgcccaacttccctcttcagctgaggttgggtgactgctcagaccagag  
ccgtgcacatgcttagtcatttgatcactgtctgagaaagccttctcttggttagaaac  
gtaagaacaacttgagggtttagtatccctctcaagctgtccaatccacggcctgtgg  
gccacatcgggccagcacgcttgaatgtggcccaacacaaattcataaactttctta  
aaatattatgagactttttctttaagctcatcagctatcattagtgtattttatgtgt  
ggcccaagacaattcttcttcattggggcctggggaagccaaaagattggacaccctg  
ctctataactggttgggtgtagtgagggctcaggttaacatgagacatcttgacagc  
ttcaggataacaaaatctctaggtccagaagttctacttgcaggcctcctgtagaactgg  
cataatgagaacaggaatctcatctttattctgtttaaatcctggagatttgattcatg  
gcacctgccagtgtggacatttgcattgtaattctcagata

>IGR3476a

tgagtgagggtcaggtaaacatgagacatctttgacagcttcaggataacaaaatctct  
agggtccagaagttctacttgacggcctcctgtagaactggcatatatgagaacaggaatc  
tcattcttattctgtttaaactctggagatttgattcatggcacctgccagtgtggacat  
ttgcatgtgaatctcagatacactggcttcattagcctgtaaaacagttcaagagacagg  
ccaagttcccaaatggtctctcaagaaagctataaaattgtgcagaagcaaaacatttga  
gtacctgccttcagccatgatgtttctatattggaagcctagatcatcctgattcaa  
cattttctgggctcattcttagagtccagggtcagccagtttgaatatggcataattct  
catactctctgaccattgggggtccactaccgggtaccaaactgtgaggggggtatattac  
tggatgtgtcacagacatccacctgccccacaccactgagatttgcattggagtgac

bioRxiv preprint doi: <https://doi.org/10.1101/2025.10.25.1025002>; this version posted October 25, 2025. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ttaaaggataatttctgccccaaactgaatgctcacacaaggcccttgactcttccct  
ggtattccccatttatgcttcaattgtccttgcttccattctgcccccttcaccttgga  
tccccagccctctgctttgatatctttgtggcttggatgc

>IGR3477a

accctgccccacaccactgagatttgcctgattggagtgactttaatggataatttctgcc  
ccaacactgaatgctcacacaaggcccttgactcttccctggtattccccatttatgcttc  
aattgtccttgcttccatttctgcccccttcaccttggcatccccagccctctgctttga  
tatctttgtggcttggatgctgagtgaggagagctctctttggtggtgagcaggaga  
tgactagtggacctctgatgacaattgactctctctctctctggcagccgccttccctcg  
gctctaccactaccactgttcaaacattgctctctgctctccccatggccaggagctcaa  
aagctgtacagaccaggaggattccagcttggacaccttatgaccaatgagctacaact  
tcagtgggcatcatctgggcatcagcttgattatgaccaggtaagttgctgagtcca  
ggcagtaacaagcaactgctgtggcgtccacctgtcaaagttctgctagttcaagatgc  
aagagcaccaggttgaaggggcacttgcctgcatgcaagttcagttcttttatgattaga  
gtcagagttccctgcaagtgagaacagagcccagctagacctggccccagggctcccttg  
ctgtctgttccctcttcttcttgatacttctggccctgt

>IGR3478a

tgtggctccacctgtcaaagttctgctagttcaagatgcaagagcaccaggtgaaggg  
cacttgcctgcatgtcaagttcagttcttttatgattagagtcagagttccctgcaagt  
agaacagagcccagctagacctggccccagggctcccttgctgtctgttccctcttctt  
ctggatacttctggccctgtcccagggcatttgacaggggctccaagtacctaggccaa  
ctgaggagcagaggttagaggtgttgaagcctccacctgccaagacctgagcactgaa  
cccaggcagcctctgtgccccagcctctgtcctctattcttctgtgagccctctttga  
ccacttctccccctttttaccctcactctccagttcaggccatcaactctggcgaagcaa  
atataaaaaccttctcactgatcccccttactgacttttggccagcacagtagcctgaggg  
atcctttaaaaacataaatccagctccttctgtcagtcaggtctcagccaaatgtcacc  
ttctcagaaaaggctccattgacctctanaatcttccatgccatcatcacatattctat  
ttattttattttattttaaaaaatagggttaagggcacaagtggtgtttgttacatgg  
atatattatgtagtggtgaagctctgggcttctcagtgtagc

>IGR3479a

cagctccttctgtcagtcaggtctcagccaaatgtcaccttctcagaaaggctcccatt  
gaccatctanaatcttccatgccatcatcacatattctattttattttatttttaa  
aaatagggttaaagggcacaagtggtgtttgttacatggatatattatgtagtggtgaa  
gtctgggcttctcagtgtagccatcacctgaatagtgaacatcgtaccaataggtaat  
ttcaaccctcactccctcccatctttgaagctccaatgcctgttattccactctgtat  
ttattttattatctccactgacattatcttgagcattctttgtttactgcttactgt  
cttcttactacctgtgaagcatcaagagggcagacaattgtcccgcatngccctaag  
cccaggacagtgccctgataacatggtaaatgggtactcaaaaagtattattgaatgaat  
gaatgaatgaatgaatnnnnccattcttaagaagagctcacattgccagtcactgg  
gctgtcaagcagtcctcaggctgacttgagtgctgagtgaggagagcctctcctgt  
ggcgagcaaggcatgagcctgccataaccccaggagttacggggcaaggcctcttggcct  
agtggatgccagccagtagggcacgggtctctttaaagc

>IGR3480a

nnnnccattcttaagaagagctcacattgccagtcactgggctgtcaagcagtcctcagg  
ctgacttgagtgtgagtgaggagagcctctccttgtggcgagcaaggcatgagcct  
gccataaccccaggagttacggggcaaggcctcttggcctagtggatgccagccagtagg  
ccacgggtctctttaaagcaacaggaagccaagtctggagataagaagtgtggctgcc  
agcgtgatagaggtgggaagagggctgaagggtggagaggtgggggctgccgggcacctc  
tgtgtgtcctctggggatgccagacctctgtggctggctggccagcaccacatgcttc  
ctgtggagagcaaggagaggagatcccctcaaaggccctggagctgggactgccccagc  
agcctcaccttgcctcactgtgttggttaagacgcagggtactgtcccacttctctg  
ccattcatggacactagggcagctgcatagggcaagtgtcatatccatgtgtctctgc  
acctggctccctgtgcttctctgtgttttagactcttcattgttacaatggattcctcca  
cactgggtgattgtgaagagctctgggaagtctgggaggaactggggactgggggctagagt  
ctcaaggaggagtgagggtctggagggtgagatactaga

>IGR3481a

agctgcatagggcaagtgtcatatccatgtgtctctgcacctggctccctgtgcttct  
ctgtgttttagactcttcattggtacaatggattcctccacactggtgattgtgaagagt  
ctgggaagtctgggaggaactggggactgggggctagagtctcaaggaggagtgggggtc  
tggaggggtgagatactagatatgagaggcagccgggtgtggtggatgggctggcaggg  
gctagctagcatttggatgcaacataacaaagacctggcatccctttcagtgtctcatcc  
cggctggttgatgccaagtagcaggaagagtgtgaaagggcacctgaggagactcagag  
actttggtttaagtgtgtatctgccactgtctggcagacaagtcgttctctgtctaca  
gcttcagtgtatgcgtctgtgaaacgggtcatgttctctctctcacatgacgtggtgagc  
attaaggaaattatgtaaatcattcagtgtactcttcaggcttcngctccccattcctgc  
tggggctatctcctagtagatgtgaggatgtctgtggacacaaactaaggaagccagaaaa  
ccgctgtcctgactcagtgcttgcaccctggcctctggcccagattctggaggcct  
tagtcagggggtgggggtctgtttgccagagctgggggt

>IGR3482a

catttcagtactcttcaggcttcngctccccattcctgctggggctatctcctaggata  
gtgaggatgtctgtggacacaaactaaggaagccagaaaaccgtgtcctgactcagtg  
cttgcaccaccctggcctctggcccagattctggaggccttagtcagggggtgggggtct  
gtttgccagagctgggggttccctatagatcctgtgggacagaacaagtgcagccact  
ggaaagcccttgaaacagttggatgtcacctgtctgagaggagcttaaagctgccagaa  
cggactggtggactggttgatccgcccccttgggaaaatccaggcatgagctgtcacct  
ggacctgagtacagttcctgtccatcctgcactagcaggccatggggaatgtcagaag  
gggaggcgtcgcgtgaaacctgtttaataacagcctgtccaaagggtccagccccagc  
cacctgaactgccaggactgttcatttccctatcctccacaggcctgccccaggcccc  
tgncaacaaatgtcacttccccacaccaacctgttctctccaggattggtattttctgac  
ttctatgttttcatggcttcttgatgccaccgtcctgtttctcttctcctctgtga  
ccagtcttacaagcctcttacacagctgcctcctcctct

>IGR3483a

ttccatttccctatcctccacaggcctgccccaggccctgncaacaaatgtcacttcc  
ccacaccaacctgttctctccaggattggtattttctgacttctatgttttcatggctt

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ctttgatgccaccgctcctgtttctcttctcctctgtgaccagtcttacaagcctctt  
acacagctgcctcctcctctgcccactcttaggttccaagttccttggggcttggtac  
ttctctctttggctaccctacaggtctcaaaacttgcggtctaaaggccaaatcaaggtct  
gcaccctccaacaagggtccctaccttttcttaacctgccaccctacaacaacacttca  
gactagtgggtgtcccagacatgtttctgcatgcccctcttggggagaaactccacgat  
tatggagccatcctaaatgcgagctactaggtccagattctttgatctagcttcagcct  
atccccaccacacctcttaccagatcacctggcctgggtgaagggtcttcttaaggcat  
cccatacacaagcatgttttctctgccccttggcacctggcaaacgactcctcctctt  
tcatagactgaccaagaactatagccgccccaacccagatgatactgattctgctcaact  
actgctagggacaaaagctgcctgacaggtgtctctgata

>IGR3484a

cagatcacctggcctgggtgaagggtcttcttaaggcatcccatcacaagcatgtttt  
ctctgccccttggcacctggcaaacgactcctcctcttttcatagactgaccaagaaac  
tatagccgccccaacccagatgatactgattctgctcactactgctagggacaaaagctg  
cctgacaggtgtctctgatacctgggtggctgagatacagtgagtactcaatattagatgg  
ggagaggggacctgtagccatttctctgaggagttgagtacctgagaatggcagagtga  
ggctcttccctgggcttatgtgtcacaataggaaagcaacagaatcccagttgccaggggt  
tgtgggggggaagcgtggttgaagcatcaggctctgacctatctgccagggacaagat  
ttgtacaggtcttttaagggtggtcttgtggatgctgtgatacacagctcagacccccctg  
cccatcccccttatgaatgaaagattatttcaccagctgggtgggagagctgccagaag  
acagccccagctgtcagccctattttggactactgctaaaaataattgccttgtgtaag  
gtcacacctacttctgtagggagcccacgtctaccaactgataaatatgaagggtataaag  
gcttggctccctctccttcttgggaaaactctgaaggatc

>IGR3485a

aaagattatttcaccagctgggtgggagagctgccagaagacagccccagctgtcagccc  
tattttggactactgctaaaaataattgccttgtgtaagggtcacacctacttctgtagg  
gagcccacgtctaccaactgataaatatgaagggtataaaggcttggctccctctccttct  
tgggaaaactctgaaggatcatcacagatgagcactcctggtctcagctggaacctcggc  
tggaattgcatagtagtctccacttctctttgcctagtctgttcagtcctcatttcc  
actgatgttgaccccaagatcttttcttaataaagggtcctacatgctcatactactca  
gtctgttccctatagaacctaatctatggcatctggccttaggagtgacagaaaaaaat  
gagatgctaagatatgattttggagctggatcatccactgttggctgccaatgaggactc  
ccatcacaggtggcaggtgaagcagacagcttttggcccatggtataatgtttaaact  
ttacctatgttgaagagaatgcattagatggtgcagtgcctcaggtgttgagaaata  
tgggggaattagccactgcaaggacaatggaattgctaagcttgactaacttccagtaaa  
agaaaatggagagcttagagtgaftaattggcaatgaaaa

>IGR3486a

agcagacagcttttggcccatggtataatgtttaaacttttacctatgttgaagaga  
atgcattagatggtgcagtgcctcaggtgttgagaaatatgggggaattagccactgca  
aggacaatggaattgctaagcttgactaacttccagtaaaagaaaatggagagcttagag  
tgattaattggcaatgaaaacataagcatgaaagccgtaggcctcttgggtcatctata  
gaaaagaagaaaaagcagagaatcagaccagacttctgtcaaagtagttaagcttcaaa

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

gaaggttatattcccaaccaaggcaggtcttctatgccaagggcagagccctggttgggg  
aagaatgagaccctgacacgtgggatgaggacctctgttgacctgaatatcttgaatcc  
tcagatttactaaacactctggacctgcagaagtgaacctactatctctgtttaaagct  
agaacttgcttcttactttaaaaagaaaatgcggaggcttctgtcctgcaagacatgctc  
tcattccatgttacctctttgtgctaggccaataactagggtaagtcaaacctaacct  
ggccagacatgctgaacttgctagtgtagaaaaggactataacctcaaaggaaattctggt  
catatccagagagtactagcaggagcttggagagtatgca

>IGR3487a

aaaagaaaatgcggaggcttctgtcctgcaagacatgctctcattccatgttacctctt  
gtgctaggccaataactagggtaagtcaaacctaacctggccagacatgctgaacttg  
ctagtgtagaaaaggactataacctcaaaggaaattctggtcatatccagagagtactagc  
aggagcttggagagtatgcacaggactggattctggaccaagggggtggaacagaaatt  
gaacaaaagagtttatggatatgggaacattcttcaggataaagtattttaaactgtgg  
caaggccccaagagatggtgcaatacatcgtttggatggctcctagaagcatggaaaga  
ggatggcccatattaagtgagggtagccagaatggctatggcagactatgaaggacgtgg  
gtgtgcaggaataataactaagcaaatcagaatactgcctgagggccaagaagata  
ccaaaacaagaaatgtattggaagaagggcaccagtatcaccaagaactaaaatggtgg  
ctaaaataggccagcattgataggaaatgtcacagaactgggctcactgatagcagtagg  
ggtgataggactctgagataatagaggccaagtcatagcacttggcccagttgtctgggt  
ggcaagattggaatggctgttaagagggcctggctcccgg

>IGR3488a

gaagaaggccaccagtatcaccaagaactaaaatggtggctaaaataggccagcattga  
taggaaatgtcacagaactgggctcactgatagcagtaggggtgataggactctgagata  
atagaggccaagtcatagcacttggcccagttgtctgggtggcaagattggaatggctgt  
taagagggcctggctcccggggagtattggacatgggttaataaaacatagcatctggagg  
gtcacaatagatggccagccaacagtctgcgggttattctgtgcaagaaaagaaatca  
atcatggataatgagtcacgtcaccccaataaaaagtaacctgccgagtttccagatctg  
aaccagttttcagacttagaacctactgattgaagaagatgccagatctcccagaaggaa  
gagtcccacaccaccacagcaagtgtgcatgataatgatttcccagcccttcccaggg  
ggacctgtgggcacttaacctggatagctacatactaggaaagagaatatcctaacatgt  
gaaagactattgaaccgggattagaattgacattgttacctaggtacctgaagtggcac  
caaaatcctctcattagaatgaggggtatatgtgggccaggtgatagattcctggcctga  
gttctgctaataagcaggtctcttgggtccacagaccaca

>IGR3489a

tggatagctacatactaggaaagagaatatcctaacatgtgaaagactattgaaccggg  
attagaattgacattgttacctaggtacctgaagtggcaccaaaatcctctcattagaat  
gaggggtatatgtgggccaggtgatagattcctggcctgagttctgctaatagcaggctc  
tctgggtccacagaccacagtgtataatcagatcaacacacttgataattagcacagc  
ccctacattgggtccttggcctgcatggtgagagtgtatagtgaaagaaagccaagtgg  
aagccttcaaaaccttccattccaggcaaaatagtaaatcaagaacaatatcacattcc  
agggttaatggcagaaattattgccaccattatagacctaaaaggagtcctcatatct  
tcatttaattaccagcaaaaccagttaaatcctgaaagatgacagcaggctactacca

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted January 1, 2015. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.



&gt;IGR3490a

&gt;IGR3491a

&gt;IGR3492a

caaaaccttccccagctcacatctatggctgcatgggtgatcccttgtgtccagctgat  
ggaggatgtaaaagctcaaacttgattcccaataaagttcagatacaatactcgccctca  
gggagatcaagagaccacccactgctaggtgactacattagccctcttatacccttgaa  
gggccagtgttcttttgacaagaataaagacacaatttaagcatgaggttgcccttcc  
tggctgcagggccacagccaacatcactatccaagggccctcagagttttattccctg  
gtatgggatctcacatagcatatcagactgagggatctactttatatcaagaaagtgga  
agcacaggtccatgaccataggatgtgctagtcatatcacatattgcaccactcaggtgt  
tgtcagtttgtagagtgttgggcaacagcctgttgatggcatagttgaagcaccggctt  
ggggtgctactttacaggataatgaactattcttcaggatgcagtttctactataaatca  
aagaccttatatggagctctgttccaataggatataatacaagagtttcagaaccaagaga  
taaaaacaggagttggccccccttactatcatccagtgcccacttggaatatatgc

ctcccatccctgcaaatctgggctctgtgggtttggagat

>IGR3493a

aatgaactattcttcaggatgcagttctcactataaatcaaagaccttatatggagctct  
gttccaataggtataatacaagagtttcagaaccaagagataaaaacaggagtggccccc  
ttactatcattcccagtggtcccaacttggaaaatatatgcctcccatccctgcaaatctg  
ggctctgtgggtttggagatcctggttccccaggagggaacatttcagcaaaagtccca  
ttagactatcagctaggatgctgccaggcacttcagccttctgtgtctagggacaag  
caggaaagaaaaggaggtaccatcttggcaggggtacctgagcctgatcatcaggaggag  
gtaagactacacagtggaggcaggagggcacaatgtagcaccgccgtgatccagttgga  
tacctctttattactcccttcccattttgacagtaaatggacaagtgaacaatccca  
gcctgagatggaatcagacctcttagagatgaaggattgggtcatgctaccaggtgagcc  
agcaggatgagcaaaagtgtactgagagtgagggggaatctggaatggatagtagagg  
aggagatgatgagtgtcatttggccctgagatcaactgcaacagcagggactgtagtt  
cattgtgaaccttctcttctaagctcccagaagtagaa

>IGR3494a

tcttagagatgaaggattgggtcatgctaccaggtgagccagcaggatgagcaaaaggtgc  
taactgagagtgagggggaatctggaatggatagtagaggaggagatgatgagtgcatt  
tgtggccctgagatcaactgcaacagcagggactgtagttcattgtgaaccttctcttc  
taagtctcccagaagtagaagcctgctggaaccattggtgtgctagagctggctacttgc  
tcgtgagatcccatgtctaaagtgttgcagctctgttttaaacgttggtagtgcacc  
gatggtgggagatattataccatgatagtttttttctttttttttttggagaa  
ccagttattgatagcacaccactggaatcctggaggagctgctcccagaaccagtgggaa  
gtgtttatagaagaagtggatccagaagctcaagggatggactatggtggaagctatg  
atatgctgccctgaacaccttcaggagtcaaggctgattgccctgctgaagaaaatt  
tccgtgcctaaggtcatgcttcttccaggggcagcttacatccaattactgatcaaaat  
gaaggcataaaggcttgacctccttggcccaacataggaagagctgaagggccatccca  
gctgtagaagctccttaggatcagctgagacttttgtt

>IGR3495a

ttcaggagtcaaggctgattgccctgctgaagaaaatttccgtgcctaaggtcatgct  
tccttcaggggcagcttacatccaattactgatcaaaatgaaggcataaaggcttgacc  
tccttggcccaacataggaagagctgaagggccatcccagctgtagaagtctccttagg  
atcagctgagacttttgtgtgactgtatttgtccaaattctcctctgttcaatcctg  
cttcttcccttcccttccatgagcagctcctgcatgccagttctgtctcagagtctgct  
tcccagggaaccaacctcaggcaggcagcctctgcatgcttccagcacaacggtccct  
gaaagtagaaaaacctcagctcaccaggggggttcttgaccctacagcctcagagca  
gagtgtttcaagtcagcttcagctctgcagctatgaaggggactaatcaccatcct  
cacctggcctggaattgctccctgggtcaaaaccttttagccctcaggcctctggggc  
ctggaggtcatgaggggtggtgagaagagaaggcggccaggtggagctcaacatcctcgg  
atagctgtcaaatgccggactatagccttcttgggcaccgcccctgtgccaacagag  
tctggactcatagtgttccataaaggaccttttccacga

>IGR3496a

ccctgggtcaaaaccttttaggccctcaggcctctggggcctggaggtcatgaggggtgg  
tgagaagagaaggcggccaggtggagctcaacatcctcggatagctgtgcaaatgccgga  
ctatagcctcttctgggcaccgccccctgtccaacagagtctggactcatagtgttcc  
taaaaggaccttttcacgacaagcacagccacatgctgggagtaggtggccccaggag  
agatgtcgaggaggcttctctgccccacaggccaggaaggggaggaaaaaccaggaga  
atggattgattcttgagtctgactccaggacagtggggccacagcctactaccttct  
gggacttgtggggttgaggcattgtagtcctggagaaatgggtccaagagtccacaa  
agtctctgatcacagtccaagaggaggaacctccaagagaatcgggatctgcagtcagg  
ggctgagctcagagacagaatggccacatttaacctgaccacagctgcaactgcgtct  
ctgtctgtccctgccaggggctcttccaagtccgccatctcctctatgtctgtcagct  
ttactgccagcgttccctcttctctccatctgtcctttccaggctctcgtgagctct  
aactgtctatcagtgctgtccgtttactcatcactgcca

>IGR3497a

tggccacatttaacctgaccacagcttgcactgcgtctctgtctgtccctgccagggg  
ctcttggcaagtccgccatctcctctatgtctgtcagctttcactgccagcgttccctc  
ttgtctctccatctgtcctttccaggctctcgtgagcttaactgtctatcagtgctgt  
ccgtttactcatcactgccaggagcctgagctatgcctatctgtttgtctgccctgtca  
tggctctgtgtctgtctgtctgtctgtgactcctggctcttcagcctgacagagtct  
aaggtcagatgtctccttctaacaggggggttcattgtaacttggggacctggctctca  
gcctgacagagtctaaggtcagatgcaccttctaacaggggggttcattgtaacttggg  
gacctcagggccacacctttttgttgatctcagagcccaaggctgcatactctgtcc  
ctcagccccataggcacaagaacctttgggtgtgacctggcccagggtatggctcagggc  
tctggcagcttcccttatttccacctgggttccaactgggtgctgccatgtccagg  
actggattggtgagaggaggcattagggtctgtctgattcacagtgtctgccctagccct  
gagaagagagagagcttccatttcagttgaggactaagag

>IGR3498a

aacctttggtgtgacctaggcccagggtatggctcagggtctggcagcttctcttatt  
tccacctgggttccaactgggtgctgcccatgtccaggactggattggtgagaggagg  
cattagggtctgtctgattcacagtgtgccctagccctgagaagagagagagcttcca  
tttcagttgaggactaagaggcacccacagaatctgccccagagaggtcccagtgaggaga  
agggacctgaggggtatggagttcactcaggacagcttccctggagtgaaggggagagg  
ggagactatgagttatcctgttattgtgtgttctgactggctccaacctcagttgtgc  
ttccctggctcctcttccccagcacatgacctcacccttatccagtctggtagaggaaga  
ggcctggataggagccagggcctccatcaggagagcttggggctgccccaggcctaactg  
gaggaagtgtgacacattcccagagagctgggcttccctcctcctgcagcttctttga  
gatggttcccgaatccgttaagtgggaaaaagagctggcagctgtgctggtgttgggctc  
ccagttccccctggctcctggatggcccaagggcctcctcttggctccctcacagatgct  
attttataagaataatgaaaacaacagccctggctgtg

>IGR3499a

cagagagctgggcttccctccctcctgcagcttctttgagatgggtcccgaatccgtta  
agtgggaaaaagagctggcagctgtgctggtgttgggctcccagttccccctggctcctgg  
atggcccaagggcctcctcttggctccctcacagatgctattttgataagaataatga

aaacaacagccctggctgtgtacttagtacctgcttatagcctgttgctgatcttggtcc  
caagaacatttttaaacatttggaatttgatgttgcccttccatccggacttctgtaa  
aagctgtgtgcatttctttattcaagggtgaaaagggtcactttcatcagactctgg  
aacatagtcactgctggcacttgatgcatgaggggcccctcccgagctgggggataaa  
gcagtagttcagagcagagaccctcacagtcccctgaggaacagatgacagtcaccccct  
gtggcgtaagaggtgggcaggcaagcctcagagtaggtgttgaggaagaggaggccccag  
tgcaggacctctccacctcccactggacattagtcttacccttgggagacagatgtc  
aaccatttggctggggtgcattccaggcaggggtagcaggtgatggtgggagtgctgtgg  
ctggttcgtgttactgggggtccagggtgatatgaaggag

>IGR3500a

gcaagcctcagagtaggtgttgaggaagaggaggccccagtcaggacctctccacctcc  
cactggacattagtcttacccttgggagacagatgtcaaccatttggctgggggtgca  
ttccaggcaggggtagcaggtgatggtgggagtgctgtggctggttcgtgttactgggg  
ccagggtgatataaggagatggatggtgagcaatgaggctagaggtatctgcaggggc  
tgacggggccaggcagtaagggaggggtcttaggtcagaccaaagggttgaggtcatg  
ctgagctggcaggtaaccttatgacacacagccagactaacccctaaagtgaagctcc  
tcaagggttggttcttccagagcctggcacagtctctgacattttaggtgctcagt  
acatatttatgaatgaattaatgggtggctgctgtggggagagaagcaggaagggtcta  
gagacaaggcctgtgggtatttgggtgattgtctgcattagttaggtggactgggtcag  
ggcaaagccataaagacaaagagaagtgggcaggttggaaggggctgggaagatgaatg  
taccaggacatggcaggggactgactaagggaccgagacctcaagaggaaccaggacag  
taccagggtctctccacttgggttctccacataggatagc

>IGR3501a

ttgggggtgattgtctgcattagttaggtggactgggtcaggggcaaagccataaagacaaa  
gagaagtgggcaggttggaagggggtgggaagatgaatgtaccaggacatggcagggga  
ctgactaagggaccgagacctcaagggaacccaggacagtaccagggtctctccacttg  
gtttctccacataggatagcaaacattacagttacctggagcctcccagaggctctga  
gacctttagataagggtgcactccacagtgtgctggcaagacaccatccacagccaca  
tcaaactgggcccttgtgagctacctctccaaaaaggagatgcaggagtaaacacgc  
agagaagaatttctggaatgatgggagcatttgggaagcaggctcagatcatatgaaag  
aagaagagagttccagtgtctggtggataagcagtgctacaaaaggcaggaaaaccaac  
agcaacattgttcatgaaagactttttttttttgagatggagtctcgtctgtcac  
ccagggtggaatgcagtggtgcttctcggtcactgcaagcttcatctcctgggttcaa  
gcgattctctgcctcagcctcccaagcagctggggactacaggcatgtgccaccatgcc  
cggctaattttttctatctttagtagagacagggttca

>IGR3502a

acttttttttttttgatggagtctcgtctgtcaccaggctggaatgcagtggt  
gtttctcggctcactgcaagcttcatctcctgggttcaagcattctcctgcctcagcc  
tcccaagcagctggggactacaggcatgtgccaccatgcccggttaattttttctatct  
ttagtagagacagggttaccgtgttagccaggatggtctcgtatctcctgacctgtga  
tccgcctgcctcgccctcccaagtgtgggattacaggcatgagccactgtgcccgcc  
aatgaaaagacttttcttgggaaaaattaaatatttgcagcagctaaagctagtattt

agttaaagctaaaaatgtatgtcctatgacctagcaattccatgtcattcccagcattt  
ccagaagaaaggtaaacaatatgtccacaaaacatgagtgccaggaatattcagtgaagct  
ttatataattagccccaaagtggaaacaccccaaatgtctgtcagcagtagaataaggaa  
atTTTTTTTaaataaaaaaattTTTTtagagacaggttctcactcggttgctcaggct  
agagtgccagtgccataatcacagctcaccttagccttgaactgccgggctaaagcagtc  
tctgcctcagccttcacgtagccaggactacaggcctg

>IGR3503a

gtggaaacaccccaaatgtctgtcagcagtagaataaggaaatTTTTTaaataaaaa  
atTTTTtagagacaggttctcactcggttgctcaggctagagtgccagtgccataatca  
cagctcaccttagccttgaactgccgggctaaagcagtcctcctgcctcagccttcacg  
tagccaggactacaggcctgcgccaccaggctccagctaattgtttatTTTTgtggag  
atgaggtcttctgtgttgaccaactggctcactcctggcctcaggcagtcctcct  
cctcagcctcccaaagtactgggattacaggcatgagccactgcacctggccagaatagg  
gaaataaatttaggataTTTTtataatgggatattatacagcagtgaaaaataacgtta  
caatgatgggcaataactagagaattacagacacagcgttgatgaaagaagtcaatc  
ataaaagggtatagtacatgcttctgttctaaatgaagtcaagaatgggcaaaactaat  
ttatgggtggcagaggttggaatagtggctatacttggaggaggagatactgattaggagca  
gggaagtacaaggaaggcttgggtgtagtggaatgggtgtatgtttccctgggtgc  
cagttatttataggtataaataaaaaactcactgaac

>IGR3504a

cttctgttctaaatgaagttcaagaatgggcaaaactaatttatgggtggcagaggttga  
atagtggtctatacttggaggaggagatactgattaggagcagggaagtacaaggaaggctt  
tggtggtagtggaatgggtgtatgtttccctgggtgccagttatttataggtata  
aatataaaaaactcactgaacgatataacttaagattgtgcacttcattgtacaatattg  
caataaaaatgaaaataactTTTTaaagggttttccacctacacaagaactgcaggc  
tttgaaagggaagtgtgaacttcagggtggtatgttaacggaaggcctgggaagttcgt  
gctgatcttcccttgaggttgacaaaaaaaggagaaaagattttaataatcatctctc  
agggtgaaagagcaggtctgggccagagataacatcagcagcaccacatgaaactgtt  
cgctgctctttttaaaccacagtgaataaactttgaagttgcattttcctggca  
gtcatggtgcagggtccctcacagaagggaattggtcaactgttccaagagtgaggc  
ctgtgtccagcagcccttagaggaccagagagggggttctgtggggccaggctcaac  
aattctgtctagcttacctcctgtgtggtcctgaggaagt

>IGR3505a

acagtgaataaactttgaagttgcattttcctggcagtcaggtgcagggtccct  
cacagaagggaattggtcaactgttccaagagtgaggcctgtgtccagcagccctta  
gaggaccagagagggggttctgtggggccaggctcaacaattctgtctagcttacctc  
ctgtgtggtcctgaggaagtcctgccctctctgggccttgggctggggagcttcagc  
actgacagtaggtgagatggctgtcatcaccctcagctccatcttgggggctgccct  
gttttgacttctctgcagactgcattccatgagtgcttggcctccccacctctgagg  
aacagggcacgcacagggtgttctcagcagcaacaggtttccgactctgcattgcc  
tggcttaatggtgtcagggcaagctgggtctgggctggggtcttccattctgcctca  
cccacttcacagataagaaaacaggccagagaggaccacgcacatttctgtg

aagcccatgtaacaaagtgggaggatccacggcaggagccgctgggtccaggacaccag  
ccatgtgccttcagcacaaccagcagcgggctcagaagcctgggacagcacagtgtggt  
gcctgcagcccctgccctccacttcaattatgcagaccca

>IGR3506a

aaacaggccagagaggacccacgcacatttcttgaagcccatgtaacaaagtgg  
gaggatccacggcaggagccgctgggtccaggacaccagccatgtgccttcagcaca  
ccagcagcgggctcagaagcctgggacagcacagtgtggtgcctgcagcccctgccctcc  
acttcaattatgcagacccagcttaccagcacatacatatgcaggcagccaggaaccag  
gagtaaagtctccagaacatagcacatctgattaccagggccagtctgtccatttgggg  
ctggcgtggtgcaggccaaatgggtagccccctatctgtgactccatgcacagggcatta  
acgtgtgaggttaactgaggatgtgtggacagcactgcaccctctcaggccatgctgtg  
agctgttctgcctgtccgggaggagcagacaggcctcttctgtgtctgtgctgaaagag  
gcacctggctcttcccaggcaggaatgtgtgggcctttaggggaacctgcctcattg  
taagctaataagatgttcagcatcttggccgaacagccaactgtggaatcagttgaca  
caaggacaccacagagaatctcatttagccaggacactgaggatggaaattttctataa  
gcacgggggaccacgtgatggcgcgtgacctgggcactgag

>IGR3507a

gcaggaatgctgtgggcctttaggggaacctgcctcattgtaagctaataagatgttca  
gcatcttgccgaacagccaactgtggaatcagttgacacaaggacaccacagagaatc  
tcatttagccaggacactgaggatggaaattttctataagcacggggaccacgtgatgg  
ccgctgacctgggcactgagccccctctctcagatcaagccatagggaaaagctcatctg  
ccatcccacctcccaagtcacatcccaattcccttcagtccttggccacatgggggt  
atcctggcagccacgccatactggaccttcagggatgcccttcacgttgcctgttag  
tttcatgcccatcatttcatctcacagactgacagattggccattccatggatgaagct  
tccctccttatgtgtggtctctctgggtatgaatgccaagtcaggatgtggccatact  
atgactgtgacagagactgctgtgggctgctgttctcaaggcccagcatatgagagag  
ggctgccctgctgccttagcgtatttcttagatttctgggtccagcctcaatgtactga  
tttctgtagtgggagagagtacagaggacacggagggtgtagagagtagaggtggtcct  
tgggaggcccatgtgaaaggaggggctatcccattgtctt

>IGR3508a

tgtggggctgctggttctcaaggcccagcatatgagagagggtgcctgctgccttagc  
gtatttcttagatttctggtccagcctcaatgctactgatttctgtagtgggagagagt  
acagaggacacggagggtggtagagagtagaggtggtccttgggaggcccatgtgaaagg  
aggggctatcccattgtctttagagaggtcttgatgtgtgaatgaatcttctcaggccacca  
agcctgctcttctccagcttagagcatttctcaggggcccgccctgctatagttgtc  
tctacgggaagaatattgttggacctatttcttggcctccttgggaaaggagtagcca  
gggccaagtcccagccaattgggagtcaagaccaagcttcttgggcccaggtatccagccc  
agggtccaggaatccagcaggccagcatcttgagatcctgaagcagcaatgccagcagg  
cttctggggagctgtgggctcaggcctgcctgagctcaggtgcagtaccacatggccc  
tcccacctggttccagccccagcaggctccctagccccactgtccagatatgagtctac  
ctgacggtagaacaagggcacatggaaaactcagggtggccgtcactgcagtctctcatg  
gtagctgttgggtgactttgaccaagggttaaggctgtc

## &gt;IGR3509a

caggcctgcctgagctcaggtgcagtaccacatggccctccacctggtccagcccc  
cagcaggctccctagccccactgtccagatatgagctacctgacggtagaacaaggga  
catggaaaactcaggtggccgtcactgcagtctcttcattgggtagctgtttggtgacttt  
gaccaagggttaaggctgtcagggtgatgagggcagtcacttggtttagtacagccagct  
tcccaccagtgtcccttccaacttccctgtttaccagaagaggtaccagaagctccctgt  
caacccttctgacctcagtttcccagagttgagccagatgccctgaggctccttcgctg  
gataaaaaccgtggacctgagttctgatctggcctctggggctggagttcaccacactt  
tgccgactctgtggctgagagactgaagtacctgtcccaggtcacacaacaagctagtgg  
caggccagctcacatgtaccatgctgtgctgaacgtggcactgaggtgaaaaggacata  
cgtctatgtccccacccccactgtcaggtacctcaggctttgtcaggagctcaaggtca  
ggagacctcatgctggaggaggtctggggcagggaagaggaggtggggcagggaagtg  
gagggtctccttgccagagtggtccagcagcgcacatccag

## &gt;IGR3510a

catgctgtgctgaacgtggcactgaggtgaaaaggacatacgtctatgtccccaccccc  
actgtcaggtacctcaggtttgtcaggagctcaaggtcaggagacctcatgcctggagg  
aggtctggggcagggaagaggaggtctggggcagggaagtggagggtctccttgccagagt  
gtcccagcagcgcacatccagctatgcacctcatacactccagagccttgggacctctgag  
caccaggtggtgcacccaagggaagagcttacagtctctggtgactggattgtgggc  
tttctctggactgaaaccaccttggaccttggccttgcactagccctgacatctgac  
ctgaatcacagggtaccttccatgttctagatgatttggcaacttttctcaggcacagt  
tgctgacctccagactgatgttccctcaaggtggagatgagcagtgggggctcttggga  
tcctagggaagggtgagggtgggcaggtgtgtggttggcctgcatggctgcaggtgctg  
tccgaagctttacagctgggcaggtttgtcagtgggcagatgtggcaaacctcctgcagt  
tctggcctgggctaagttgtggttgaacttaacaattatgtccagaacaaatgggtct  
ttatcggtcctggtcaggtggagaaactcacagttggaga

## &gt;IGR3511a

tgggcaggtgtgtggttggcctgcatggctgcaggtgctgtccgaagctttacagctggg  
caggtttgtcagtgaggcagatgtggcaaacctcctgcagttctggcctgggctaagttgt  
gggtgcaacttaacaattatgttccagaacaaatgggtctttatcggtcctggtcaggtg  
gagaaactcacagttggagagatttggatttaggaagctgtgtggactgtggagtaatc  
ccagttgcctccaataaactcaaatgtttagaattcaagtttagagctaagggttaggggt  
cagagcttttagcccagctctggcagcactttaggactcaagcaactggcatttcacccc  
aggcagggcccagtgctctgcgggtgtgaggtggtactagtcaggggggcccgtcatgc  
catggagacacaggagagtggtggccacgggtttgcaggccaagaaaagagattttacttt  
gaggtcagatgactctgttggccagaggaagccagggtttggagatgtccctggcctc  
tgtgggccccctcctcccaggtcccacactgtgccagtgctctgtgagtcacctgaaa  
ggcctgttcccctgagccattaccagggtgacatttctgtgtgcccactgggcct  
tgagggggtggcagggtgggattagatttagagctcccca

## &gt;IGR3512a

gtccagaggaagccagggtttggagatgtccctggcctctgtgggccccctcctcccca  
ggtcccacactgtgccagtgctctgtgagtcacctgaaaggccctgtcccctgagcca





atttgtaatgagactcttcagggtgaaggtaaagtctttgtaaactcctcatagcaga  
gctcctgaaacaggttcagggctctgggtgcacagcagggcaccagatgaccagcctcat  
ccatccctggtaacctggacggaaggagccctggaccaagctcagggcctaccctgat  
tctccacaaggagacctgtgggtctcgcaggccaaacagtggaggcaatgggcatctgg  
tctctcctgggctcagggctgcacttgggtgggaggctcacctgctgactgagctggag  
gttcatccccacactctgagctttctccagatttctcactccactatccctgtgtt  
atctctccctgggactgactggtgagatctctctcc

>IGR3516a

gggtctcgcaggccaaacagtggaggcaatgggcatctggtctctccctgggctcagggc  
tgcacttgggtgggaggctcacctgctgactgagctggagggttcatccccacactctga  
gtttctcccagatttctcactccactatccctgtgttatctctccctgggactga  
ctggtgagatctctctccctgttcaaatgtggtatgaaaggctccggggcagctgtt  
cttacctactggtttctggggcctattgaagggaacccggaagccagagaaattggc  
aggagcacaaggggcactaagagcaaaataacgttgatggagaccagacttatcttg  
tgtgtgtattgtcagccgagagttcttctgaatgtcagcacagattgctgtgacttt  
tcgtggggagatatcgtggctacttcttgggaagaatggctttctgacccccagagca  
catgagccaggagcacgtacagggtcatggtattactgaagggtactccaagctggtcc  
gagccctgggcttggcagcatttctgtggagaggggtacctatatatgtgaggctaagga  
aatgctaaccctctatcagtcactggttacgcggaagacagagaggacctatcg  
ctgggcaagatgtgatttcatgatttcaacaaccaca

>IGR3517a

aggtgcatggtattactgaagggtactccaagctggctccgagccctgggcttggcagca  
tttctgtggagaggggtacctatatatgtgaggctaaggaaatgctaaacctctatcag  
tcactactggttacgcggaagacagagaggacctatcgctgggcaagatgtgatttct  
atgcatttcaacaaccacagcacacttcatggattcttgcctgtgctgacactcaggct  
tcactctgagcgttcacctgacttcttatttgaatcacacctgaagtcacggtcttct  
tgcattgagcatggagtgggtctctggccaggcctggcgtgtctgcagggtgctgactgaa  
gtagaggaagcaagaggggtggtgggcgcactgactgcagacagtgccaggcaggggctaa  
agctgccacaagccagcttcttagggccacctgtcaaggagaagctggccctgctgcc  
gcctaagacttggggcacatccacttctcatagtcctggaggagatgagggaacaggt  
tcaggaacaaggccttgagcccagctgtcaagtaaggagaaggaggagcctacttgt  
tttagcctgcaggccatgagtttaggggaaagtgcctgattagattcaaaattcatg  
taaaaataaaaaccaattcagaacatgcggcactacagc

>IGR3518a

ccacttctcatagtcctggaggagatgagggaacaggttcaggaacaaggccttgagc  
ccagctgtcaaaagtaaggagaaggaggagcctacttgttttagcctgcaggccatga  
gttttaggggaaagtgcctgatttagattcaaaattcatgtaaaaataaaaaccaattca  
gaaacatcgggcactacagccatgtaccaacaaattatgaccttaccttctgactctcag  
agattaagatcacccatttggggcaagtttggtaaatacgtgcactgtgacctgtg  
gtttgttttcttccctgaacagttagctctatttgcctgttacttctggaatggtta  
aatctcagagtgtgaggggcagggcgtggggcacaggggccaaggcctctacagggcagg  
tgtcttgcctgatgccagagtgggcctgttcagccagtgaccagccaacccccaggcctc

cccaggaagggtggtgcccttctctgggataagagttccctgggctggcacttggactt  
ccaggtgaacttgagagccattctctggggtgggagccctggagcatcccggaagcccg  
tccaggtgtgcagaattccgcacatatgcccggtctcactccctctgctctgacagt  
gttggcccttgatagtgcccaacgcctgggaggcccccg

>IGR3519a

tctctgggataagagttccctgggctggcacttggacttccaggtgaacttgagagcca  
ttctctggggtgggagccctggagcatcccggaagcccgccaggtgtgcagaattccg  
cacctatgcccggtctcactccctctgctctgacagtgttggcccttgatagtgcc  
caacgcctgggaggcccccgccccctccacctccccgttctccctnccctgcctca  
tgggaaggcaggcaccnantggcatttgcctcatggttaaaacaaactagaacnntnnnn  
nnntagaagcatttttaataataattattacggtaaaacatttgaataaatatggaa  
tatgaacttaataaataaataaataattttaaaaataaataataataatattact  
gatttctgtcagtataaaatattccattcttctgccatgcctgtatcagggtcagtgtn  
gcccagggcaggtccaggccactcccaccatggctgtggcccaccccttggtccctccaa  
galgaccatcctgagttctagctcttgttcatgagagagcagctccccggcttgcca  
gcctcatctggccggtctcactcctggactggctcccagcagtc aaaggggatgacaagc  
agaaagtcttcagggttctcttgaactttcaaggtga

>IGR3520a

actcccaccatggctgtggcccaccccttggtccctccaagatgaccatcctgagtttct  
agctcttgtttcatgagagagcagctccccggcttgccagcctcatctggccggtctca  
ctcttgactggctcccagcagtc aaaggggatgacaagcagaaagtccttcagggttctc  
tttgaaacttcaaaaggtgatantctgggttgacaggaaagttcctttaaaaaaagaaa  
aataaaaaacacttgagtcaggcaagtggttaacgtgggggaaggaagcaccagcatgt  
ttcttactgcctcttagaactcagaggccaggaggccactccaggacacaccactga  
cctgggtcaggtgacgtgctgccaccacgtgttcccaaggagtgcatagtcttcca  
gtggcagccagagtc aaagggcctgacttaagtccagcctgaggttgcccttctgggcag  
tcaaacgcctgccttttttggtccagggcagagcagggcagctgagctgaggtcgtctct  
gggcacccagaaggagtgagtc aaagccacaaacttctcccttcccgcaggaaggag  
tgctgaggtccttgccattccaagtagcctcccttcttgcctctgcaantcaagc  
accccatgtggggccagaggaaagtcctgccagaaggtgg

>IGR3521a

tcccagggcagagcagggcagctgagctgaggtcgtctctgggcacccagaaggagtgga  
gtcaaggccacaaacttctcccttcccgcaggaaaggagtgcctgaggtccttgcctat  
tcaaagtgcctcccttcttgatcctctgcaantcaagcaccatgtggggccagagg  
aaagtcttgcagaaggtggcacttgggcctgggcacttctctgggccttgggcaggcc  
ccaagtttcttgggttgccctcactctgacctattaaccantaatgacaataatga  
ccaggataggagcagctcctgctggggagcactgtgggcttcagcgtctgtggctctga  
ctccttgggatgaaatgggctgctgcctcctctctggagggtaatcattacataactg  
ttggcacagaaacccctggggtcctgaacagccacagccatagatcttccccatgtcg  
accncaccccttagattaagacattcctgctggaggccctgccgtaggcactcaccgggg  
ttggagggcagtgctgnttgtagtggctggccatcatgtcaaggggccccttgagcttg  
tgaggctgccccgcaggccctgctgtacagctccaggcgggtctgtaggcaggtcggct

cctgtggaaaatgtcgttcgtcggtagcagtgcccaagt

>IGR3522a

acattcctgtcggaggccctgccgtaggcactaccggggttgaggggcagtgctgnttg  
tagtggctggccatcatggtcaaggggcccttgagcttggtgaggctgccccgaggccc  
tgctgtacagctccaggcgggtctgtaggcaggtcggctcctgtggaaaatgtcgttcg  
tcggtgagcagtgcccaagtgccacagtgggtacaagaactctccaccactccttttgc  
tgctgccccagccccaggagtagggcttgaggaggggcacaggctgggtccagtcatag  
accctgccctgtccatggcaggcacgaacctgcccttctcactgccccgccaggccacc  
ctcagcggcacctggagaggagcccagccttagggaaggaggtgactctcaccatcat  
tcaggagaggggggtggggcctcacctggacctgctgggtgggcaagggtgttcctga  
aaccctctgtcctctctgtatgcagcactgtctcaacaggacttgggtctggggcaca  
gtgagcgcaccaaacccacagctcctgtctcatgaagtgacccactttaccacctgtc  
ccctggtgactcctggccattgaatgctaggtctgcccatggccgctcagctgataaagg  
agctcatgtgactgccatagggggcacggccagtagcctct

>IGR3523a

tagtcagcactgtctcaacaggacttgggtctggggcacagtgagcgcaccaaacccaca  
gtcctgtctcatgaagtgacccactttaccacctgtccctggtgactcctggccat  
tgaatgctaggtctgccatggccgctcagctgataaaggagctcatgtgactgccatag  
gggcacggccagtagcctcttgagcaccagttgctacccctcctcctgcagccagctg  
actggagagaaagtggacaacctgtgtggtgccatctaaatggagtccccacctccac  
cccaggggcaggggcttctggaaagctatgtcagagagaagcatcttacctggaggtcaaa  
catttctgagatgacttctactgtttcattctgtagaaaaggaaaatgtcatgttatcaa  
gtcagcaggcgtggccagtcagggggcagctgggtggcctaggcacaggcccacattctc  
tacttaccatctcagcagcagtgctctactcaggttcaggagacgccgggcctcctgg  
atggcattcacatgctcccagggtgngtgcctggggctgggagcggggcgggtgcagag  
atgctgcaggccacagtgcacaagagcagcaggtctgcagccacatcctccagngaact  
ttagcctttctctctgtgtactgggctcactggcaaaaga

>IGR3524a

agtgtcttactcaggttcaggagacgccgggcctcctggatggcattcacatgctcca  
gggtgngtgcctggggctgggcgagcgggcgggtgcagagatgctgcaggccacagtgcc  
caagagcagcaggtctgcagccacatcctccagngaactttagcctttctctgtgta  
ctgggctcactggcaaaagagctctaaatacacagaggaaatgattaatggtgaccaca  
aaatgccaggggagcgggggaactacctgaactgtggaatcctggccttatcagcca  
cacatgggaacgggtgagcctttccctaggtggtcaggttgggggtttcattaatgaa  
cctttccaagaaccgacagcccaccaccgccttctgagggtctccagccctcctg  
ggcagctgaaatgggcctgaggtgccccctcctctgaggggcacagtttgacttct  
ggcctggaatggctgggtggggcgtgggagacacttagatagggtccccatcctgcct  
gtaatcccaggggcctttgggcaggctatgccgcctggtgcctcattctgactccagc  
cttctcttctggtccactgtgagagacttgagtgtgaggggagctctcacagacctgc  
cccactgacagttcacatgggctcccaccaggacctgga

>IGR3525a

gggcgtgggagacacttagatagggctccccatcctgcctgtaatcccaggggcctttgg  
gcaggctatgccgccttggtgcctcattctgactccagccttcttctctggccact  
gtgagagacttgagtgtgaggggagctctcacagacctgccccactgacagttcacatgg  
gtccccaccaggacctggagcaggggggcaacctcagtcagtaaggggggacccctgcc  
cctgtgagcagagggaatgaccaccatgtgcacatccagcagcagactgcagccactct  
cagcaagcttcagagggggtgtggctgggtcaagtcgggaccagagcttgactcttggc  
tctggagccaccttctgagtactccccctctctggttatgtgaacctgattccctctg  
cagagcaggtttggccctctgaggttcggactacactcctatatgtagccccagaagac  
accaggagcttcaggctgggtccagggtgtggctgcatccatctcaggtacaggggacaa  
tggttccccagcaaggccctccaggcttaatttctacataaccccagcatccccaac  
tccagaggccttctgtggaagtgtggaagtaggaaatctaaaggctcttgaggggctga  
caagtgtttgatttcacaatggaggttcagagaagacagc

>IGR3526a

tccagggtgtggctgcatccatctcaggtacagggacaatggcttccccagcaaggccc  
tccaggcttaatttctacataaccccagcatccccaaactccagaggccttctgtgga  
agtgtggaagtaggaaatctaaaggctcttgaggggctgacaagtgtttgatttcacaa  
tggaggtcagagaagacagcacaggttgtgttgcacaaggtatctggctcaagctgcc  
ccatgcctgggttcatagctaaagggtgtggggccacacgtgccatttctgggtgta  
tgtgtgctgctgtgattggtgtacatacaggtgcctggtagaggggaggatgtttcca  
tgcagatgcatctattgagtcctcttacctgctttatgaaggctccaggcctctgaagg  
tgactctgatactggagaagctccctactccaggtgcagtgcccttggggccctagaggct  
galtcagcctaaaccagtgggggttgacacaaagcgagaacattctgctggactcaggttg  
gcgagccttcagagagcaggtggagttcatggctttagcactgtggtctgagtctgcagc  
cctggccagttccctgactgtgggagttttctgaccttgcatagagaaccaaacct  
tagtctccagacccactgtgagggcagcccatccatc

>IGR3527a

ggttggacacaagcgagaacattctgctggactcaggttggcgagccttcagagagcagg  
tggaggtcatggctttagcactgtggtctgagtctgcagccctggccagttccctgtac  
tgtgggagttttctgaccttgcatagagaaccaaaccttagtctccagacccactg  
tgaggccagccccatccatctgagcctgcgtagaacactcctagtggccaggctgggggtg  
ggaacatgaaatgtccaggccctggcccttctccacctttttgcaaggccttggctca  
gcttttccagggagctctcgggggagagatgaggacatggatactacatgtagatatca  
catgtgttggatagaccctggaggctggagggcaggggaaggagccatagatagtgggt  
cagctgatggccaggaggcagagagcctgtatgacctctgggagagaaggctacttt  
cctcctagaaatgagttgtcatagctcagacagtcagtcacaagctttccaatccaca  
ccaggacctgttctggggaggttaaacgggaccctccactggccctcacatttggccctt  
gaggctcccagctctggtagaaacagactgcaatggaccctccatggtgtgaccttgac  
tcggcagggggaagtccagagctgagggatccagagggc

>IGR3528a

atagctcagacagtcagtcacaagtctttccaatccacaccaggacctgttctggggag  
gtaaacgggaccctccactggccctcacatttggcccttgaggctcccagctctggtagg  
aaacagactgcaatggaccctccatggtgtgaccttgactcggcagggggaagtccaga

gctgagggatcccagagggccaccttcttagcttggggatccaaggggaccagagagct  
tactagagatcctgcctgcaagcccaggctgaaaggctagaagtcaggtgggtacgttg  
ggttggaaaggagaggggcaggagaggacaggggagaatgttctgggcacagggagccctg  
gggttttaggaatgggtataaggaacagcaggcagactccagagagattgaggaggtaga  
atctcaacaggacttgggtctatagtgaagtcactcagtcattcattttttgagcat  
ctactaggttcccagcagggaaaaggacataaggatgacaaaatcggtcagggctcctgc  
ctccaaggacttttaaccccatccatggaggagcaagattagtctactacccccctcc  
ccccccaccaaaagtgtgctctgaatgtgagtaagaggagttagaatcactgtccacatgg  
ctaaggtgaggaccaggggacaaaggagcagatcttcag

>IGR3529a

aaaaggacataaggatgacaaaatcggtcagggctcctgcctccaaggacttttaaccc  
catccatggaggagcaagattagtctactacccccctccccccaccaaaagtgtgctc  
tgaatgtgagtaagaggagttagaatcactgtccacatggctaaggtaggaccagggg  
acaaaggagcagatcttcagagcgtgaggcccacgggaagtttggagtttcagagtctg  
catgtacaggagacagatctggcagcgggtacatgtctgtgtgtagctgaggccacggaa  
gttattcaggaagaagagctgagggccagcaaagctgtgttaagggtcgggacataaca  
galgggcaagtaacaggccagtggccaaggccctaggagggaaggaaaggaggaagcaa  
gagtcataataaagaatccatttcggcagtggtggcctgcaggtgccaagtcagcaca  
acaggacagaaatccatgggttgggtgatgaggttggggcagccacacatcttttca  
tggaagatgacatcagggtgaggccatgacacaggcaggcattcctagattgcatgt  
attttaaacagtgtcaaccgatagccagccatgctgactcaggggctccgatggggctgt  
ggcagggcagaggcggggaccacgatgggtggtatgacc

>IGR3530a

tttggtgatgaggtttgtgggcagccacacatctttctcatggaaagatgacatcagggc  
tgaggccatgacacaggcaggcattcctagattgcactgtattttaaacagtgtcaaccg  
atagccagccatgctgactcaggggctccgatggggctgtggcagggcagaggcggggac  
cacgatgggtggtatgacccctctggggcccccttctacagagacaggngaaaaccct  
ctggaaggagtctcctatgctgtccacccacaggctctgtaggaaacaggggcttgag  
tactccaggatcctatnacgagagacattatcacaaggggaaggaaatgggcctcaa  
gtcccttgggtaccatggcaccgccacaggcttggggctgatctgatccttcttga  
cctgtccaacccttgatagggttcttgttatctctggggacctgagatctgggagacca  
gtggtcagcccagtcacacaatcagtgaccgcagaaccagaattgaaccatctgt  
tctgctatcctagcattttcattgtcttggggcaggaagttgggaaatgctgatcac  
ctggctggaccagcaggggtggaccagcgtgcttgtccctcaaggcagctgtaaaga  
gagatgcctgccaggtgttcgcaggtaggctggagtggcc

>IGR3531a

aatcagtgaccgcagaaccagaattgaaccatatctgttcctgctatcctagcatttt  
ccattgtcttggggcaggaagttgggaaatgctgatcacctggctggaccagcaggggg  
tggaccagcgtgcttgcctcctcaaggcagctgtaaagagagatgcctgccaggtgttc  
gcaggtaggctggagtggcctgtgactgtccagggaagtctgggctgaaggcagagttt  
ccccagcagatcctgcatccaggcatctctatccccaggcttgggctcttgccttac  
ccagccaccaccaatccctgaagcctaggaaagtcctcctcctgagcctcaaccctg

catctgtacaatgggtaatggccactgcctcaccgaggaaactgtgcctgccccagga  
aactctgtgggagatcctcccaggaagagacaatcctcaatttctccttgcctcagtg  
ctaggggagatttctgaagccaaactgggcagaggagcaggcctgctggagtccag  
ggacagctgccccctgcccagccctagccgcagagggaacattctggacacacgtggtg  
aggtagggagtcggcctccacctgagtcagggtcctgggtcctgcatcaccgacagga  
gatectggtaccgcatggcaccatgagtggtttgtccttc

>IGR3532a

ccaaactgggcagaggagcaggcctgctggagtccaggacagctgccccctgcca  
gccctagccgcagagggaacattctggacacacgtggtgaggtaggagtcggcctcc  
acctgagtcagggtcctgggtcctgcatcaccgacaggagatcctgtaccgcatggca  
ccatgagtggtttgtccttccttgcactccaggccacaccagacatatgaagcaacat  
ctctggcttctgcggtttcagccccattctgtcccccagtgcatccccctctgtctcggtc  
cccaaatgtacacctcaaaaagggaagctgccctcgccaagctccaattccagtttgcc  
tcttggtattcccagggttcctggcactggggagtgccaggaggcctgggaggatctgag  
ggtggttaacctcaaccacatgtggtctctgcatctattcagccaagcttcggggaggg  
tttctgcggagtagcacctcacaggccccctgcatcggagagctcacttctggtggt  
cccatggggtgggggacaggggagcacaaggcccacactcataggcagagacatggagacc  
atttctgtgatgggggagacacaagggtcacaggagggtttgagaggtcagcccatttg  
cactggaatggcaagttgagaggccaggggacctccagg

>IGR3533a

tcacaggccccctgcactcggagagctcacttctggtggtcccatgggggtgggggacagg  
gagcacaaggcccacactcataggcagagacatggagaccatttctgtgatgggggaga  
cacaagggtcacaggagggtttgagagggtcagccatgttgcactggaatggcaagttga  
gaggccaggggacctccaggaagactcagtcagtgtggccatgtgggtccggaagtcag  
ggcatttggaagtcactggtaaaggagggtcccaacaccagagggggtgtggagagtg  
agccaggcagaaaagtgtggcgggtgtcaacttttgggatggccaaggacaatgagac  
ctccttgtttgtcttcttcttggggcttctttttccctcaggatctggcaactc  
caccatgcacatcactcaggcagaggagtccttgtggacacaaacgccaatgggtgtgc  
caggccttcccacacagtgcctccctgacctgtgtctactactgcctggtgtactcc  
ctctagggccagaaatgcatccccctgctcctgagtcctgtctgtgagcctcatctctggc  
tgggaggatcatcaggcaccagaggggccacagcctatgtgtgccctcttgggaagagc  
catcgggaggtgcattaaaaatcaaaagcaggagaaatca

>IGR3534a

ccctccctgacctgtgtctactactgcctggtgtactccctctagggccagaaatgcat  
ccctgtcctgagtcctgtctctgagcctcatctctggctgggaggatcatcaggcacc  
cagagggggccacagcctatgtgtgccctcttgggaagagccatcgggaggtgcattaaaa  
atcaaaagcaggagaaatcatgagaccagaagcctgtataatttctgaagtcctgcaggc  
atccgttcttgcctctatgtctggagctagagtcagggtcaagatgccagggtggaagtc  
ccaggcccttggcggctcgcgcacctgcacccctggaactgatgggtcagaattgag  
gtggcagatgtgggcttctgtctcagcaggacgagtggttctggaatgagcctcctcc  
aagactcttctggatccctcacgggtccctcagacttccctgaggccctgtttgggcag  
gcacagctcgtgcatgtccttggcctgtggcctgcccttctgagccccggctggctca

bioRxiv preprint doi: <https://doi.org/10.1101/000000>; this version posted March 1, 2014. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

ccccacagggcatgcagcactactttgcaggctgttgggagatgcactggatatctgca  
aggggaaggtgtttctgttttggtttctgttttggcttgcctccatctagcct  
cagtctcgtgtccatcaaagagagggaatggtaccagg

>IGR3535a

ttggcctgtggcctgccccctctgagccccggctggctcacccacagggcatgcagcac  
tacttttgcaggctgttgggagatgcactggatatctgcaagggaaggtgtttctgttt  
ggttttctgttttggcttgcctccatctagcctcagtctcgtgtccatcaa  
gagagggaatggttaccagggtccggaccagcctccagccttctcattccctggagggtg  
agtgtaaatttaggttccctcatgggaagtgggcctgtgtagaccctccccagggccc  
taaagcctccccaccccagcccaggaggcaaacgccacctgcacctcgtgtcgcagcc  
tgactgatggcaaatggctgagccatacagattttccagaaagagccagcttgaacac  
caggacagggaaccatctcctcagctttccacttgcctgggtggggaggaggtgtcc  
aaggctgccaggggcagctcttgagtctggccatcagcctgggagagcaggggagtcag  
ttgatcacagaccactgcaggggacatcctcctgattcaaggctctctgaatggtag  
tggcggctgcccagtggtttattccttatgctcaggagggcctcgcccagccatggg  
atcaggacacagagcaggtgcgcagctggtgtcacgaag

>IGR3536a

ttgagtctggccatcagcctgggagagcaggggagtcagttgatcacagaccactgca  
tggggacatcctcctgattcaaggctctctgaatggtagtggcggctgcccagtggtt  
tattccttatgctcaggagggcctcggcccagccatgggatcaggacacagagcaggtg  
cgcagctggtgctcacgaaggaggcaggggaaggagaccctgctctgctgctcggcctt  
cgctccggcgcccgtgcccctcggtgcctccccacagctgtcctcctcctgacaccc  
tgacttggcccctcagggcacacacatcatccacacagcctgctgtcctgctgcccgt  
gatctccagcacagcccactttccctccaggaaagggtgagtctccaagtgcaggcccc  
aggcaagtctctgcaaagcaggtcccgggagcacctgggtcaagggtcatgagtctg  
aggaggagggaaggagcctcacaccagaaggattccatggacccacagggcagggagg  
gtcatggaagggaagggaagggtcactcatgagccatggctggaggtagagttgagc  
ttggggctcttggggagcctgagtgggagctggaggaggccttgacaaccagccatggca  
ggggacagctgggagccagggtctctcagaagtctt

>IGR3537a

cacaccagaaggattccatggacccacagggcagggagggtcatggaagggaaggga  
aggggtcactcatgagccatggctggaggtagagttgagcttggggcttggggagcct  
gagtgggagctggaggaggccttgacaaccagccatggcaggggacagctgggagccagg  
gtctctcagaagtcttaaggcatggggacagagacaaaggaggcacagaggacca  
cctcctggatctaagccccaatgtgtgtgtgtgtgggtggggagggggtgccaggtagg  
aggacaggacagatgggcgtgtagaggcatttactgggcaatatgagagtgtcaggtga  
gaagcatggagctgagcgctaaaggctgcgtgctcacttgggcctggaaccaggaggt  
tgtagggcagaagttaacacgggaggcttgatccagtcaaggggagacccaggcacat  
ccagggtcagacttaaaagaattcctgggcctcagtgggcattagtgaaccactgttgc  
taaggattcagaggctctggactcaataaccttcattttctgcctcagctctgtctg  
tgtaatggggataatcacagcctgggtgcctgggtcattgtgggattctttagtcct  
tctcagtcaggagggcagcaactttgtgaccacc

## &gt;IGR3538a

attcttgggcctcagtgggcattagtgaaccactgttgcttaaggattcagaggctctgg  
actcaaataaccttcatttttctgcctcagtcctgtctgtgtaatggggataatcacag  
cctgggtgcctgggtcattgtggggattctttagtccttctcagtcaggaggcagc  
agcaacttctgtagccacctcgttgagcttgacctgaggcttcaagggggaaagtgg  
gcccctagccccacccttggtccacaccacctctgcctcctctccctctctcccacat  
gggtcccccattctctggggccagggtatccctctgctggaccagcccctatttctc  
cagcacctctctccctctgccttctctctgttggtgtaaacacacagtgtctgc  
catggctccatcctgtccttcgcctccctccaccaccctcctcaggccacagtcac  
cagtcctaccgtctccacagcggccagtctgggctgggctggcctgggatcagagagga  
ggaatggggagaagagactagctaagaccagaggtgcctggggccaggctggctgggc  
tccaggggcaaaagcagtgaccagggcacagccttcaccttggaacttgccaccagc  
cacactctggcctctccactgcttagtctctctgtgcct

## &gt;IGR3539a

cggccagtctgggctgggctggcctgggatcagagaggagggaatggggagaagagacta  
gctaagaccagaggtgcctggggcccagggtggctgggctccaggggcaaaagcagtga  
cccagggcacagccttcaccttggaacttggcaccagccacactctggcctctccact  
gcttagtctctctgtgcctccgcttacctgtctctcagctccatgccctctcccc  
cagggcattctgcctccttctctctgtgctttccacccttctctgctggatgaactt  
ctctctcaggcccttctgtgccaccatgggcagtgcctccgatagggtccacgcccat  
ccatcggtcctgtgctgtgtaatgacccccaccgcactgtgctgggccaactgcacaa  
ggccaggaggcctgaaaggcctggcccagtgtctacctatgccgccccagcctggggg  
agccgtggagggtcctcagagcagttgtctccactgagtcacatgggggctgagtcagg  
gcaggaggaacagagcccttctggagtggaggattctgtcaaggggtgaggcttgt  
tgtccttctgagttctgccctccttaggcacttgccttctgtcaatttcccttgtt  
ttattttctgcatttccaagttttcagtaaagagtata

## &gt;IGR3540a

gcagttgctccactgagtcacatgggggcttgagtcagggcaggaggaacagagccct  
tctggagtgggaggattcctgtcaaggggtgaggcttgttgccttctgagttctgcc  
ctccttaggcacttgccttctgtcaatttcccttgtttattttctgcatttccaa  
gttttcagtaaagagtataacgcttcccatctctcctccaatgaaaaacaatagtt  
ttgttttttttttgagatggagtctcgtccaacaatagttttaagtgaataataa  
aattcctggctgagagctgtaatccaccttcccttgagcagacacctgggatgtgggaa  
ggcaggaaactgggccttctctggtgttctgggattataatggggcgatgctgcccc  
tggcgccatctggacacacagacctggcccaaaggacaggctccacatcctaatgccatc  
acagtggggattcaatttaacatacaaatggagggaacataaaccttctgtcaaagc  
atgtagaaattccccagcctgtccaggaaactgactgccacttggttctggccccagtct  
ggcttaagctgcagctatactattccagaaggtcagcgaggagccccagcgcactctg  
aaaaggctccggccactgcctctccagcatgtcacctccg

## &gt;IGR3541a

acatacaaatggagggaacataaaccttctgtcaaagcatgtagaattccccagcc  
tgtccaggaaactgactgccacttgggtctggccccagtctggctttaagctgcagctat





cctgatgtggccctgggaggagcaggggcgcggtgcagtttctggaaggaccactag  
ggggagacatgccacaggattagcatgctccagaccacaggacctaattcaagcccca  
gctgggccactatcagcttaggcagttgctcaaccaggccgaacttcagttcccatgaa  
acggagaaaacatactcttggtgggggtgaggaataagttagatagcataggtaaaatgc  
tcagaacggctcctggtacctggtagcagttctgtgattttcaagattgctagggttat  
catcacctttctggaaatgggggtggcaggaggcagtggtgagaacaagctcaccagac  
agcatccacgtggcaggatcaagccaccaggatttgtgg

>IGR3545a

gttgggggtgaggaataagttagatagcataggtaaaatgctcagaacggctcctgtacc  
tggttagcagttctgtgattttcaagattgctagggttatcatcacctttctggaaatgg  
gggtggcaggaggcagtggtgagaacaagctcaccagacagcatccacgtggcaggatc  
aagccaccaggatttggcacaccagctcctctaaaatggtcactaagtcccaagtc  
aaattgagacactggtatacaagcagttgttcagagtctagttattctcacacatccct  
aggaaccagtttaaaactcgaggtacaaatgaacatgctccccacccactctgagtttt  
ttgcagaagcagcaggacatggctcctctgtaaaataaatacagttcacactccaggca  
ataaataaataaatacatatacataataaataatgtctcaatgggataaaaatgagaac  
acaaccgcacaaggccaaatgggagctgcacatttcagaaattagataattaacaattca  
tctgatgccgcaggaaaaggtgaaatgcttctggtcctggaatgtgtgagagatgacca  
gaggtttcagaagtctgctgtttttgatgtcccaggcncgtgtggtgagaaggcccaga  
gaacgagctggacgttggactnaaaagatcgcgaggctca

>IGR3546a

gggagctgcacatttcagaaattagataattaacaattcatctgatgccgcaggaaaagg  
tgaaatgcttctggtcctggaatgtgtgagagatgaccagaggtttcagaagtctgct  
gtttttgatgtcccaggcncgtgtggtgagaaggcccagagaacgagctggacgttggac  
tnaaaagatcgcgaggctcaaagtcgtctgttgagcctgcgcattctcaagggtttcag  
atagaacgtcagtttctccggaattcattccagtcaccgtccttgatatggattggatg  
tcgctataaagaaccaagaaggtggcattaggtgagtcaggctgtaatggtgatgacc  
agctgaggagcaagccatgacgggcatcttgggggacagcttaccgtgggtgcggccgtg  
gccaggggcagacatggcaggagattctgtgaaagagaccaaagcagatggtcagagat  
tcccttgaaaggagtgggccctgctcctcccagaggcagggcagggccaaacacag  
ggatcccaaaccctcaacagcttcacatactttaagaatgctctcaattgctgatgcgtt  
ctgtaaaactctgacagccctgttgatgcctccaggttggccttcgaaggttatfttc  
ctaacggggcagagaatacacttaagggggaaaggttaca

>IGR3547a

ccctgctctcctccccagaggcaggcaggccaacacagggatcccaaaccctcaacag  
cttcacatactttaagaatgctctcaattgctgatgcgttctgtaaaactctgacagccc  
tgttgaatgcctccaggttggccttcgaaggttatfttcctaacggggcagagaataca  
cttaagggggaaaggttacagagtatccctcccacaagcaggtggaagtcacccccacag  
tttccaagcccactgttggggacatcctcggttccctcctagtcccgttctgcctca  
ggtgggtccctgccaagggcacaggcctagaagtgagtggcaggcaggacctggtttcc  
tcaagccccagctctgtgctccattgagctacataaagggcctaggtgggctgggcgc  
agtggctcaagcctgtaatcccagcacttgggaggccgaggcaggcagataacctgagg

tcgagttcaagaccagcctgaccaatatggtgaaacccgtctctactaaaaatacaaaa  
atgggagtggtggtgcatgcctgtaacttagctacttgggaggctgagacaggagaatt  
gcttgaactcaggaggcagaggtagcagtgagctgagatcgtgccactgcactccagcct  
gggcaacagagtgagactcttctcaaaaaaaaaaaaaa

>IGR3548a

accaatatggtgaaacccgtctctactaaaaatacaaaaatgggagtggtggtgcatgc  
ctgtaacttagctacttgggaggctgagacaggagaattgcttgaactcaggaggcaga  
ggtagcagtgagctgagatcgtgccactgcactccagcctgggcaacagagtgagactct  
tgtctcaaaaaaaaaaaaaaatgggtggggagggggtacctaggtggatcttctgcac  
ttgggggaaaaatatctcaaaaagaagctctacaaaagacagggggtttccaaggga  
agtattttagctcagaggctgataacagtggtcatgccctgactgaattaaagtctcct  
agaaatcaagaagaaatcacagagacccagcatggaatgggtgcagcatgtgagctg  
tgagtgcacaaacacagatggccaggaactcagcaaggttccacttctgtttgac  
ccaagaaatgtcatgcaaaggtgagacagaacaactgcaaccaactggaacatgaaaa  
taactgtaaatgataatgccacagccaatgagggtggaaaacacaaactcaatttttaa  
gggaaaaagaagctggcacatctgagggggaaatttctgtctgtagtccagagtctgcc  
ctaccaaacactgaccttaaggcccttggtattcctcacc

>IGR3549a

gtgagacagaacaactgcaaccaactggaacatgaaaaataactgtaaatgataatgcc  
acagccaatgaggggtgaaaacacaaactcaatttttaagggaaaaagaagctggcaca  
tctgagggggaaatttctgtctgtagtccagagtctgccctaccaaacactgaccttaa  
ggcccttggtattcctcacctagaactgccttttcatcttaatttaaaagtcatcttc  
attattatagccatggctgtggccatgtattgaactcttaagtccagatgctgggcccag  
aacatgcacatttgccatttgattgtcataacaatcccactgagataggtgctattaac  
cctattttacagatgaagaaagcaaggctaggttaagatggaatgacatggctgaagtcac  
ccaggcaggaagtggatcgggatccagggctgagctcttaccatcagaatgtcttggtc  
ttcccatagggtgttgaaagtcctgtgggggtgaaggagagaaaggcccatgaggcc  
ttttggccttaggcagccaccacctcactgctgcaggccagtcttatcaagctactc  
accagcaaaggcaaaggtggctgtttaagtgtgttataatttcacgatcatgttagag  
cagtaaacccagctgtctcaaggncgttgtctgggtca

>IGR3550a

agtcctgtgggggtgaaggagagaaaaggcccatgaggccttttggccttaggcagccac  
caccctcactgctgcaggccagtcttatcaagctactcaccagcaaaggcaaagggtg  
ctgctttaagtgtgttataatttcacgatcatgttagagcagttaaccagcttgtctt  
caaggncgttgtctgggtcatgggagcttgagtcggggcgaccaggagttggagcag  
gagcaggacgggcaggcggtcatgtttggatcggcaggaggcactgtctgttctgg  
tcctcgtgggctctgaagagttggcaacaacctcccgccttatatgtgcagcagaag  
gtgccacacacccgggcaaggcgggggaggtggtggtgtggggcaggcgtcggaagga  
tctttatctgacatggaacctccatagaaaaccacagacgtaattattcatccatgactt  
tctagtactcaagatcagtgaaacaagaaaaagattacttaaacgttatcacttcactt  
tgtcaaggaggatgagagatgggaagcatggcagcaggtgagaggaccctgtggcagga  
aggggaagcctgactcagctcactgaggcctcctgccagtgggatctcatctgccatca

cctggactaccctggccctctgctgcccgcctgcttgg

>IGR3551a

aaacaagaaaaagattacttaaacgttatcacttcatcttgtcaaggaggatgagagat  
gggaagcatggcagcaggtgagaggaccctgtggcaggaaggggaagcctgactcagct  
cactgaggcctctgcccagtgaggatctcatctgccatcacctggactaccctggccctc  
tgctgcccgcctgcttggctctgggtgggtggccaggaggccactggaacagatgagagt  
ttgtctggtagccgggtcacgctgctaaacatccacgttcagcctcaggctctgagaagca  
catctcttggtgccgcttccaatacagaattactggtgtccagtcgccagtggtttgt  
cccatgggcttcgggcagcttctccttgacactttgttctggtggatggccgagggcgc  
tcaggccccaggtggccattcttactggtctgtagcagtgccatggctgttccctgc  
gtgtgggactcagcctctgcaggaggccccggctgcagcccctggcagtcctctggttagc  
accgagagctgagctcaggtacctgaggacactgtcactgggagctgggggaggggctgg  
cctgggaggttttaggaggcagaattggcatggtctgaggggtgaggtcaaggagggagaa  
aggagagcaactccctggttcagactgggcctcaggctg

>IGR3552a

aggaggccccggctgcagcccctggcagtcctctggttagcaccgagagctgagctcaggt  
acctgaggacactgtcactgggagctgggggaggggctggcctgggaggttaggaggca  
gaattggcatggtctgaggggtgaggtcaaggaggagaaaggagagcaactccctggtt  
tcagactgggcctcaggctgctggggcagggttggcaggagacagttgtattgagaggt  
cttgatccccgtctgtgctgagcatggattgccaggtgcaggcccagtaggcaaggtt  
gcagagaggggatgtgagtggggacagaccatggggaaatccacaagggaacctgagaaac  
tgcagccagataggaagcaggaaaccagaagggcgggggtggttatccagagggcagc  
ccctgagagaagaggggtcctctgatacgggcctgtctggggcctgcctgaccaccc  
catggggtaggggcttttggttaaagggtgagtgtgacaggggcatgtggaagacttctt  
caagatgattggccccgggtgggagggagaggagagcagtaaggaaaggccagggctctgg  
gtcatggtgcgggtgtgtgtgatcagtggtggggatgcgggataggaggttatgctgagg  
cagcgggaatttgggtgcttgggcttctgagcataagcag

>IGR3553a

taaagggatgagtgtgacaggggcatgtggaagacttcttcaagatgattggccccgggt  
gggaggggagaggagagcagtaaggaaaggccagggctctgggtcatggtgcggtgtgtgt  
gatcagtgtgggggatgcgggataggaggttatgctgaggcagcgaatttgggtgcttt  
gggcttctgagcataagcagatcaggtgaagacaaggaccaggtgtggctgtggggagg  
caggtgaagaggctgtgactcaaggccatgctgtgaggatgatttctgtagctgatatgc  
cctcctggctcagccccaggtgggcccctggaccaggaagagccctaggttctggaccgg  
gagtggagtctgacaggcacaactcaacacacagaggggagccttagcaccagcttgcgt  
actccgtaggcacaattcattcaacagacgtctacaaagcacttgctgtgaataaaacag  
acatggaacctccactagcagctcagttgtgaggagacagattccagcttctgtac  
ccttctgtggtcccagacctgcaggtcagccctgcccgggagcttgttagcggtgtcaa  
ccctcaggccccagcccagacttctgaatcaaaaatgcattttgataagatcctcagt  
gattcagtgcaattgaggggctctgatctaactacctcag

>IGR3554a

agctcagtcctgtgaggagacagattccagtcctgtacccttctgtgtcccagacc  
 tgcaggtcagccctgcccgggagcttgtagcgggtgcaaccctcaggccccagcccaga  
 cttctgaatcaaaaatcgattttgataagatcctcagtgattcagtgcaattgagggg  
 ctctgatctaactacctagcaatcttagctccggtaggggtccctattgccccacggac  
 ccagagttgttccttgcatactcaactgtaccttgggtgtactgtctatgtaaacgttt  
 tggggactgtgcacaaataatgtgattccttacagagaaaagctgtatttttttagtg  
 taagtgggcttttctaggggaattttaaaagtcaatgaatttaaagctgtggagacaaaac  
 attcctgtattttttgtttctttaaagcaagactttgtgtgtaaccacacatgc  
 acacaaaatcctgaatagtagtattgtaaatcttgacattgtagtgttttctcatttt  
 aaaaatgaatatataccagcctgagcaattggcgaaacctcatctctacaaaaatata  
 aaaaattagccaggcgtgggtgcacacctgtgtcccagctacttaggaggctgatgt  
 gggaggaccacctgagcctgggagggtcagggtgcagtga

# >IGR3555a

gtattgtaaatcttgacattgtagtgttttctcattttaaaaatgaatatataccagc  
 ctgagcaatttggcgaaacctcatctctacaaaaatataaaaaattagccaggcgtgt  
 ggtgcacacctgtgtgtcccagctacttaggaggctgatgtgggaggaccacctgagcctg  
 ggaggtcagggtgcagtgagttgtgattgtgccactgcactccagcctgggcgttgag  
 tgagaccatctctcaaaaaaattatatatacacatagtttataaaggcaaaaggagg  
 ttgaggctcatgctaggagcattggaggacttgcggggtttcaaccaggggaggcag  
 gtgaagctcaggtgcacctgctgtgggggaaaggatgagaaagtcaaggcagcagggtg  
 gccagtgaggagataattgggagtcctctggaagacaggtgggtgggaagctggactagga  
 ggttcttacggggtggagaggactgggtgaagggaagcgtctcacagctgacttctatt  
 gagtggcacttgtgaagtgtggagaactaagtcttttcatggctgaactgttaatcct  
 catgatgaactgtgaggcaggtgctgttattagccccattttccagatgaagaaactgag  
 tctcagagaagctgagctgatgtagctagggaagtgcacac

# >IGR3556a

gactgggtgaagggaagcgtctcacagctgacttctattgagtggcacttgtgaagtgt  
 ggagaactaagtcttttcatggctgaactgttaatcctcatgatgaactgtgaggcag  
 gtgctgttattagccccattttccagatgaagaaactgagtctcagagaagctgagctga  
 ttagctaggaagtgcacatcactgggactgagataagcagaacagtccaaccagaggct  
 gacacccctgggcagcatcgacaatgacggccttaaaggatgatccatgtggcagg  
 aggggacagcagggtgaggatgagatgtaaccactctgattactgacggggagatccctg  
 aggcctctggcggagtagttcagtgatgggtggggcgaagcctctggcagtgaggctgag  
 aagcagtgacgggtgagacggagggtagaagattcttgaagttttttgaaggaaag  
 agggggatggggcagccagaggagtcacagggtcagagacgcaccttccacacagaagtt  
 ttagctccttctctttaaaggaggtgagccgggaatgggtgagatggctggccggccag  
 cacaggcagagccccaccatcagctgtcacgggtcctcgcagagagctcagggaagggc  
 tgctgggtggccagctcatctgggtggggtaggtgcag

# >IGR3557a

ggagtcacagggtcagagacgcaccttccacacagaagtttagctccttctctcttaa  
 ggaggtgagccgggaatgggtgagatggctggccggccagcacaggcagagccccaccat  
 cagctgtcacgggtcctcgcagagagctcagggaagggtgcctgggtggccagctcca

tctgggtggggtaggtgcagtggggtggcctgggtggccacaggtttgtggtgggagg  
ggacaatggcttctgtgttctgtgaaatagaggtaagtcagcccctgaggtggggct  
agaagcaataagggtggtgaggtttgggtggcttgagctgtgactacctggaggtgacctt  
gaggggctggcagcctggggtcagagggcgaggaggtgggaggaccagggccttggca  
ggcaagaatatggaatggaaggccccagaggcagggagtggggcatgggaggaggctgg  
gatgggcagggaggccagctgggcagagcaaggaggcaggaggtggtgcagccccggac  
cccgagaggccagtgactgcagcccaatacctgctgccgttcgatgaaccaggaggga  
atggaggacatgttcctaaaagcaaacctcattccaaaggggctgccaaggatatctgg  
gtagttggccaccacagcgcttcngtgagcccttgaccg

>IGR3558a

gggcagagcaaggaggcaggaggtggtgcagccccggacccggagaggccagtgact  
gcagcccaatacctgctgccgttcgatgaaccaggagggaatggaggacatgttcctaa  
aagcaaacctcattccaaaggggctgccaaggatatctgggtagttggccaccacagcgc  
ttcngtgagcccttgaccgaggcatagcctgggtcatcctgggggtctccttcaaggtt  
tgccttgactctataggagcttcagcaaaatcatgggcaccacttcctcctccagagg  
cgacagtctgccagccctgaggagagacctgggtccctgtaagatggtgattccacc  
caggcctttgtgtcaaccagcccggcttaggggaaacctccttltgggctgggctgat  
tgctatcaagaagggaatgagcacagtgcccaccctggggcaggcatgagggagggt  
gtgccagggcccgacaggagagccagcccaagactgcagcccagggtctgccaagccc  
tgaggtttcaggaggggtctctggaccctgtctaattgatccctgtggcctgaccn  
nccctnnngnnnnngncaactgttggaagctctggccctcanggtccagtccaactaga  
gglacatgcctcctcttcccatcactacccccacaggc

>IGR3559a

gagccagcccaagactgcagcccagggtctgccaagccctggaggtttcaggaggggtc  
tctggaccctgtctaattggtacccctgtgggcctgaccnccctnnngnnnnngnca  
ttgttggaagtcttgccctcanggtccagtcactagaggatcatgcctccttctcc  
catcactacccccacaggcctagtgaattttctggggtaccgccacaggcaagaacc  
tgggcctcagtcactgtgacaagctcctccgccacccttccatggcatcacaagtgtca  
gatttaactgcccagacctcggttgatttccgtggtggccctgatgacatgcctg  
gtttgtcaccacaaangcagctcagggttcttggccagccaagcagtgaaccagatgt  
cccctgtcacctgagcagagagctcaggaaaaagccaccgagcgggcccagctggagag  
ccctggcctcctgtccaanncnngntctgactccatcccaagacctacacagcctcca  
cctgtgcaccctcgcctttctattcctgtgtgcagggtcatggcttcttggggccagt  
cggngcagagcagaccctccatccagggccagctctaatagagaagacagttggagaatc  
cccatttagaatgatgcctgtgggagacagaagcccag

>IGR3560a

cnngntctgcactccatcccaagacctacacagcctccacctgtgcaccctcgcctttc  
tatccctgtgcagggtcatggcttcttggggcccagtcgngcagagcagaccctcc  
atccagggccagctctaatagagaagacagttggagaatccccatttagaatgatatgcc  
tgtgggagacagaagcccagaaatgaggcagcctcatccagcctgcaccatcagagaaga  
caggaggaaaggacagctatgacctaaaggatgatctggagccaggcaagccacagaaga  
agtgttcctaggagtgctgggttgggggtgcagggtctccatctgttggcctcaatc

cagggctccaatatctggatacctgggggtggccatatggttctattgttattaataagt  
tatgggcttfcagtgtctgtcactctcttgttaccacctgaaatacaaagctttggaag  
atgcattctattgcatttatcatatctatcgcagacaaaaccaagagctccccgttctc  
aaagaagctcccccaaaactgtgaggtgacaaggttggggcataaatgctaagaacctgg  
cagtcaggccctcaggaaatgctctcttaagtgggggagactcacatggagcattagt  
tgtgtagatgatgttgccatgcgaagtcttgtctgcctcc

## &gt;IGR3561a

tcatatctatcgcagacaaaaccaagagctccccgttctcaaagaagctcccccaaaact  
gtgaggtgacaaggttggggcataaatgctaagaacctggcagtcaggccctcaggaaa  
tgtctcttaagtgggggagactcacatggagcattagtgtgtagatgatgttgccat  
gcgaagtcttgtctgcctcccaggagagaggggaagggccgctgggtgggcagctgc  
aggtcagagctgtccagggaaggacaggaccagatgctagctaggcaggggcacagacag  
accaggtgagctcagagccaggctgcctctcagccgtgcctgtctgtcttattcttct  
tgggtgaggtgaggagaaaccttttacattgtttccagccttactgatcttttcttacag  
aaaatgatgaataagttgatgtgttgtcgtggaggtccatatcagaaaagagtatcag  
tccactggggcttctccccacacctcatcctcccccaacccccacacctgaatct  
cctgcaccgccctcacccgtgtctgggctttacagaggatgtgggccaggccacttcaga  
tccacacaggttagggaagaccaggtacctccaagcagtagatgtggagaccgtt  
ttgcctccccctctctctcatcttcttctctcagcctc

## &gt;IGR3562a

cacctcatcctcccccaacccccacacctgaatctctgcaccgccctcacccgt  
gtcgggctttacagaggatgtgggcccaggccacttcagatccacacaggttagggaaga  
ccacggtacctccaagcagtagatgtggagaccgtttgcctccccctctctctca  
tcttcttctctcagcctccaaaagccccctaccacaaatggccattagaatccagacta  
aagacaactcttgaacatcatccttgaatccagtggcaactgagcacgccctctatga  
gtagctgggtgccagatgggacacagggtaggaacagctccgctcggccccaggccaggcac  
tcattgggttcttgccttccccgcagaaaaggtgagatccaggagcaatggatcctgagg  
tgggcacacagccccgaagtccactgccctccctaccagtcgtcactgccattgtattg  
ctggtcactgtctgtggccttgggcacatttgggtgaggcgcacctgcagggtcacactgg  
agtcagcctttatctggcatcttcaactgcagatgcacaccagcctattctttgcctca  
tggaggatgtgcgtggttagatgttctttgccaagtggtggagtgtgaatattcacattgg  
cacagctggcttcttcttttgcacactggaagctggt

## &gt;IGR3563a

gggcacatttgggtgaggcgcacctgcagggtcacactggagtcagcctttatctggcat  
cttactgcagatgcacaccagcctattcttgcctcatggaggatgtgcgtggtaga  
tgttctttgcaagtggtggagtgtgaatattcacattggcacagctggcttcttctt  
ttgcatcctggaagctggttcagaaagtgcctgtataccccaggcccttgcctagtgc  
ctggagccaggaggtgatggtccctgccctgccggcctgtgtcagactgtgtgtgac  
ccgcttggctgtctgtctcctaagcagctgggttctctctggggcctgggcaggacaga  
gttgggggaggtgatgggggaactagtgaaggccacccagaaaggaggcaggggaatgg  
caacaaggccacaaggacagcccttctggcctaccacacacacttggccctttaga  
acaccaccttctgaagcctaacctggctgccttactgaacacctcaaagctctttaa

ctcatctctttatccatttgaacaatccaaagatgattgagggtgtgtgaggctgggga  
gcgtccctctgtcactggagtctctgtgttccagaagagcccggtccgggtcaaagtac  
ctgcccttgcctgcccttcccaaacggaacagcattt

>IGR3564a

aaacctggctgccttactgaacacctcaagctctttaaacctatcttcttatccatt  
ggaacaatccaaagatgattgaggtgtgtgaggtggggagcgtccctctgtcactggag  
tctctgtgttcccagaagagcccggtccgggtcaagtaacctgcccttgtcctgccctt  
cccaaacaggaacagcatttccactccacctctgccccccagggttcttcccctctccact  
gccagcagccctccagggtgggccaggggccaccaccaggaccttctcagtttttca  
aaaggccctctcgtctatttggcttccagaagctgactggcctcttttgtctctggccc  
acaggaactctgcaaaccttgcccatctccacacctacacccagggaagctgccacct  
gggctgggatgccactgccccaggctgagcaaggtacctgccacgaccttccaccttc  
tctacacctgacccaatgttctggtttcttcaagggaaaaacagcggctgcacatcgaag  
aaagcaattctaataacttgttaatagcttcccgagaacctgggtgatgttgggctct  
tgctaccaaccaaatctctcatgctttgttcaggctcttgaactccaggcctgagagc  
tgggctcaggctcctgggtcaccaataattccttctcgatat

>IGR3565a

ctggttcttcaaggggaaaaacagcggctgcacatcgaagaaagcaattctaataacttg  
ttgaatagcttcccgagaacctgggtgatgttgggctcttgctaccaaccaaatctctc  
atgccittgttcaggctcttgaactcccaggcctgagagctgggctcaggtctctgggtca  
ccaatatccctctcgatatccaggaatactccactccttggtacagacgttggcagtt  
gaaagtttagctctggaatgagccgctcagtttcatcttggggatactgacaatcatgt  
gtatttatgttgcagattacttaacggttattcactttgttgtgaaaatattttttta  
ttaaggggagccctcttaggagcctctgagcagagctcagagcgggtacgagagcatctac  
atttctctcaggtttcagtaaaftccttctcctctgggaaagtgagcactttgtagag  
gggcccttctgcagcagtctgcatttctagaaggcttctccatttgacttgggtctggg  
ttgcaatttccacactccacagttaa

>IGR2312a

cactgcaacctctgcctcctgggtcaagcaggttctctgcctcagcctcc[tgagtagctg  
ggattacatgngactgccaccacaccagctaatttttgatttttagtaaaagatgagg  
tttactatgttgccaggctggtctcaaattcctgacctcaggtgatccacctgcctca  
gcncncnnnannngnnnnngnnnnnnnnngnngnnnnnnnnngtgcccagccaacaatatgct  
ttattatctgatagagctagtctctacttattacttctatttcagaaccttctagct  
attcttccatgcttattctccctaaggcattttgggtatcattttgttaaagtcctactt  
accatttcactttctgcatctgctctaagggttctggaagagtcattcccaaacttcag  
ggaaaaaaaggggtgaagattccaatcaggacagtcagactacctgatgacgatgtagggca  
gcattctgttgtaagcacctgtaaagcccgggacataagaacatcaatcagataggagga  
ctctctgggcactcttgagcatcattttgtgaagttggtgaacagtataagagaatggat  
ttaaactgaacatttccagagaaaaaaaagtaagcaaatatcagtttc]ttttggcag  
atgacattgtgcatgtctataatccttttgcattatcata

&gt;IGR2313a

gtaaagcccgggacataagaacatcaatcagataggaggactctctgggc|actcttgagc



atcatcttctgtgaagttggtgaacagataagagaatggatttaaatctgaacattttcag  
agaaaaaaaaaagtaagcaaaatatcagtttcttttggcagatgacattgtgcatgtctat  
aatcccttttgcaattatcataaggcttttcattcttctgtcaactggatcctctaagc  
tactactcagtcattgtgtgacagatgttccctttggtagagttctttgcctaccagagttc  
tcctcttaaggtggaggttaattggaaatgggggatgggaggacatcaaggagaaggaggt  
taaccaggatgttccagggtataggtttggcnaatgtaggtctggcatgactctgtttt  
gccccaaactagtaggctgcagtggaagttagggtccacagggtatgagactcaaaaaaa  
aaaaaaaaaaaaaaaaaacaactaagtattatgttcacttcagattaaatcagtaaatt  
ataagtatcaggcacattctgtaaaggcactgtgtgcctggatttggcttcttttggag  
cacttacatgtcttgggttaatatgtaatctcttgtgaagctttactca]cacaggagaa  
aacagatcctcatcttgccttggccctgtatacatag

## &gt;IGR2314a

[illegible]

>IGR2315a

[illegible]

## &gt;IGR2316a

ttccccaattaatacttttataattcttacgcctgtctttactgcaat[ctctgaacat  
aaattgtgaagatttcacggacacttatcacctcccaatcaacacctgtgatttct  
atgcctgtctttaatctttaatcccgctcatcttcataagctgaggaggatgtatgtcgc  
ctcaggacctgtgatgattgccttaactgcacaaattgtttgtagagcatgtgtgttg

aacaatacgaatctgggcaccttgaaaaaagaacaggataacagcaatgttcagggaaac  
aagagagataacctaaactctgaccgctggtgagtcgggcagaacagagccatattct  
cttctttcaaaagtaaatgggagaaatatcgtgaattcttttctcagcaaggaacatc  
cctgagaaagacaattctccctgagggtaggcctctaaaatggccactttgggggcagc  
tgtcttttacggtgnagctgtagggatgaaataagccccagtcctccgtagcactcca  
ggcttgtaggatgaggaaattccacctaataaaatttggtcagaccgggtgtctgctc  
tcaaaccctgttctgataagatgttatcaatgacaatgcgtgcccaaa]acttcattag  
caatttaatttggccccggctctgtggtcctgtgatctc

>IGR2317a

gtagggatgaaataagccccagtcctccgtagcactccaggcttgtag[ gatgaggaaa  
tccccacctaataaaatttggtcagaccgggtgtctgtctcaaacctgttctctgata  
agatgttatcaatgacaatgcgtgcccaaaacttcattagcaatttaatttggccccg  
tctgtggtcctgtgatctcaccctgcctccatttgccttgatattctattacctgt  
gaagcacgtgatctctgtgacctacacctattctgactcctcccccttttgaaatca  
ctaataaaaacttgctggtttatggctcagggggcatcatggaacctgccaatatgtga  
tgtctccccggacacctagctttaaaatttctcttttgtactctgtccctttatttc  
tcagaccagctggcacttagggaaaatagaaaagaancctatgtgaattatcagggctga  
atttggccgatatacaccattaaagaatgggcaaagaaggccaggcacagtggctcatg  
tctgttatccagcactttgggaggccaaggcaggtggatcacctgaggtcaggggttg  
agaccagcctgaccaatatgatgaacccccatctactaaaaatacaaa]aaaaanaaa  
aaattagccggacatggtggcatgcgctgtagtccagc

>IGR2318a

ttaaagaatgggcaaagaaggccaggcacagtggctcatgtctgttatcc[cagcactttg  
ggaggccaaggcaggtggatcacctgaggtcaggggttgagaccagcctgaccaatatg  
atgaaaccccatctctactaaaaatacaaaaaaaaaanaaaaaattagccggacatggtgg  
catgcgcctgtagtccagcaactcaggaggttgaggcaggagaattgattgaaccagg  
cgccggaggttgacgtgagctgagattgcgccactgtanctccagcctgggtgacagagt  
gagactccatctcaaaaaaaaaaaaaaggggcaaagaacatgagcagtcagttcactgaa  
aaataaataaaatggccaaaaatacacaaaaacatgctcaacctcattcataattaata  
aataggaatgaaagtaacaatgatatccattttcacataacagataaccaatgattaaa  
aaattaggccaggtgctgtggtcacaacctgtaatcccagcactttgggaggttgaggcg  
ggtggatcacttgagccccaggagtngaaaccagcctgggcaaactggcaaaatcccgtc  
tntaccagaaaaaaaaaaaaattagctgggcttgacgggtgtgcatgcctg]tagttccagc  
tagttgggagctctgaggtgggaggatctcttgagcctggg

>IGR2319a

gtcacaacctgtaatcccagcactttgggaggttgaggcgggtggatcac[ttgagcccag  
gagttngaaaccagcctgggcaaactggcaaaatcccgtcintaccagaaaaaaaaaaaa  
attagctgggcttgacggtgtgcatgcctgtagtccagctagttgggagctctgaggtgg  
gaggatctcttgagcctgggggattgaggtgcagtgagctgggaatctaggatgcacc  
actacactccagagtgagaccctgtctcagaaaaaaaaaaaaaaaaagaattaggtaat  
ctttattgttggtgagattattgaaaaccactcttacctattaataattagattataatt  
ggcacaatatgtagagttcaatttgggaatatctatgaaatttttaattggctctctttg

ctccaggaattttacttctatgaatctacctgtaaatccaaatatagtaagtaattca  
caaaggggtgtaggagcataggnagaatgttcgttgaatgnttatttgaatagcaaaaa  
cctggaaatgacctacatgtctccattcatggagcctgggttaataaattatgtgtt  
cnagtataaaagtaagatttncattgtgaaaacttcaaatggcatggaa]tgtactggaa  
aaaagtacaagttcacctccctctcccaggaggatccct

&gt;IGR2320a

gnagaatgttcgttgaaatgnttatgttaatagcaaaaacctggaaatg[acctacatgt  
cctccattcattggagcctggftaataaattatgtgttcnagtataaaagtaagattt  
tncattgtgaaaacttcaaatggcatggaatgtactggaaaaaagtacaagttcacctcc  
cctctcccaggaggatccctagaaaaccaatgaactgtttggtagtagccctacaga  
cattttgtttgcacaacattatgtacacacacatatatatataatttttanacggc  
actctttgctccaggaattttactctgtgaatctatctgtagattatactacatatac  
ttattttaaatgtacttatatacatttttaaaggaggtagcctattttaaaagaaggta  
aaggagcaatatgtaactatttggaggatattctgatacaatgttaagttaaaaagt  
ttaacatatataatgttattgtgtgttattctttttattttattttattttat  
ttttgagacagagttttgcntttgttgcccagggttgagtgagtggtgcaatcttgact  
cactgcagcctctgcctctctgggttcaagcaattctcctacctcagcctc]cagagtagcc  
gggattacaggcacctgccagcacacctggctaattttt

>IGR2321a

tgtgtgttattctttttattttttattttttattttttgagaca[gagttttgct  
nttgttggccagggttgagtgcaagtgtgcaatcttgactcactgcagcctctgcctcct  
gggttcaagcaattctcctacctcagcctccagagtagccgggattacaggcacctgcc  
gcacacctggctaattttttatttttagtagagacagggttcaccatgctggccaggc  
tggtcttgaaactcttgccctcaggtgatccacctaccttggcctnccaaagtgtgggat  
tacaatgctgagccaccacgcctgagttgcnngtgtgtttaaaaaattatatacatant  
gngnecatgatgtngtgcaaaacaaantgtctgnancnctactcaccagtttngatnng  
ctttctagagctcctcctgggagaggagaggngaactgtactttnttcngtacatc  
tatgctatttgacgtttcacaaatgaaaatcttactttancattgaaaactaatftaa  
ggaagaacaaatgcacaagatgcagctcaccgaggttaaacaagtagggggcaatgatgc  
tgccactctggaggccgtggatgtgacccccaccgccatgttctgacc]agggttgggt  
agagctcagcagtggaagacatacagcatggagaaagcaga

From the foregoing, it is apparent that the invention includes a number of general uses that can be expressed concisely as follows. The invention provides for the use of any of the nucleic acid molecules described herein in the diagnosis or monitoring of diseases, particularly IBD, such as in the genotyping of samples from  
5 individuals to be tested. The invention further provides for the use of any of the nucleic acid molecules in the manufacture of a medicament for the treatment or prophylaxis of such diseases. The invention further provides for the use of any of the nucleic acid molecules as a pharmaceutical.

While this invention has been particularly shown and described with references  
10 to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the scope of the invention encompassed by the appended claims.